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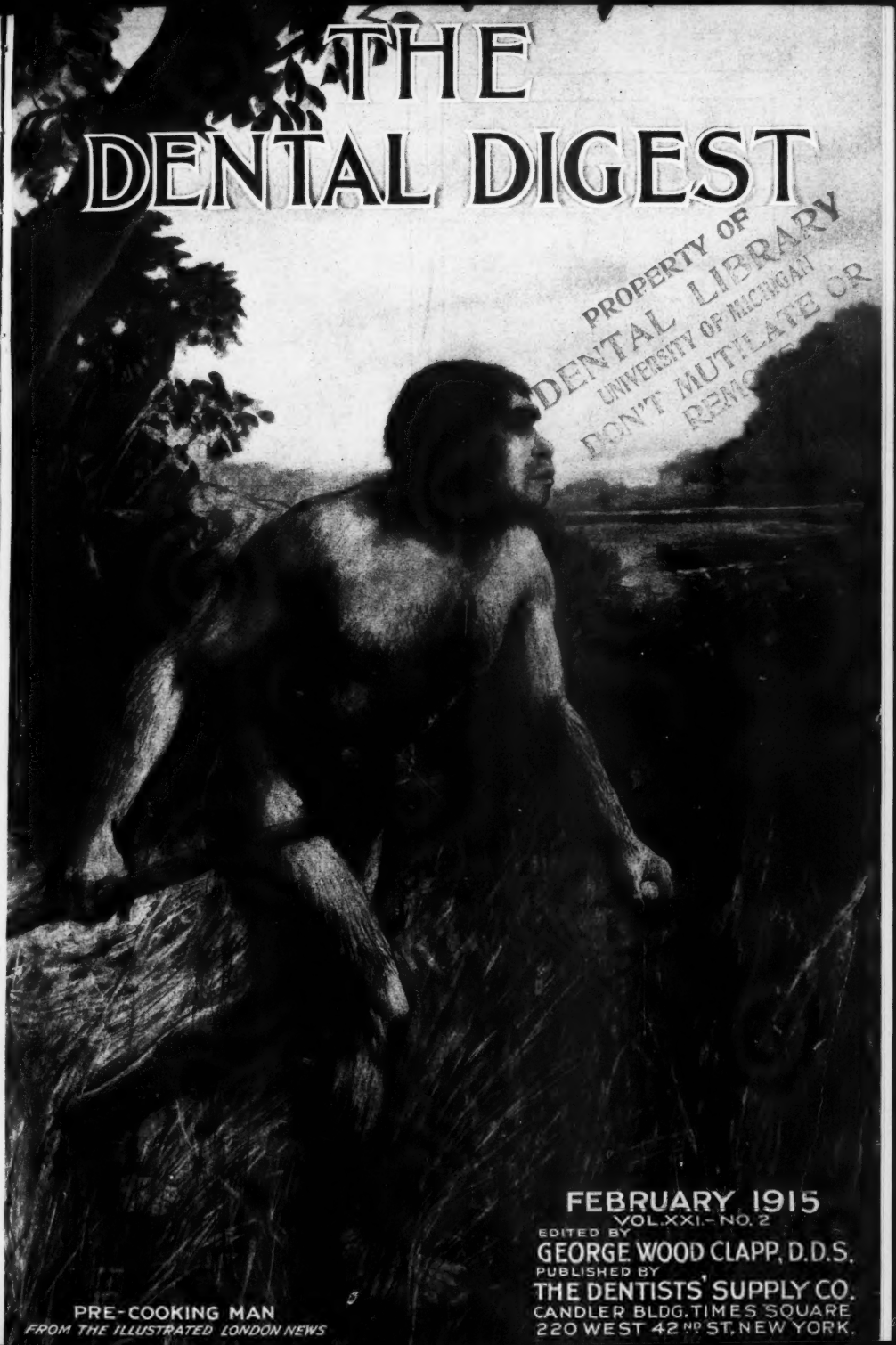

PRE-COOKING MAN
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GEORGE WOOD CLAPP, D.D.S., Editor

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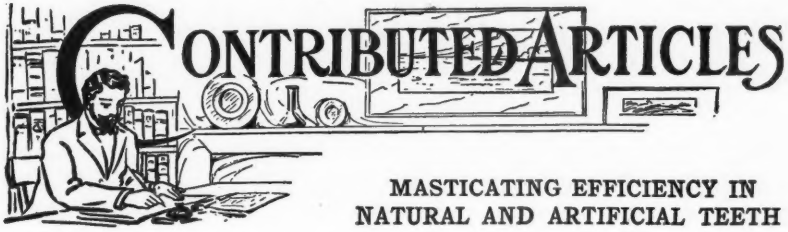


MASTICATING EFFICIENCY IN NATURAL AND ARTIFICIAL TEETH

BY ALFRED GYSI, D.D.S., ZURICH, SWITZERLAND

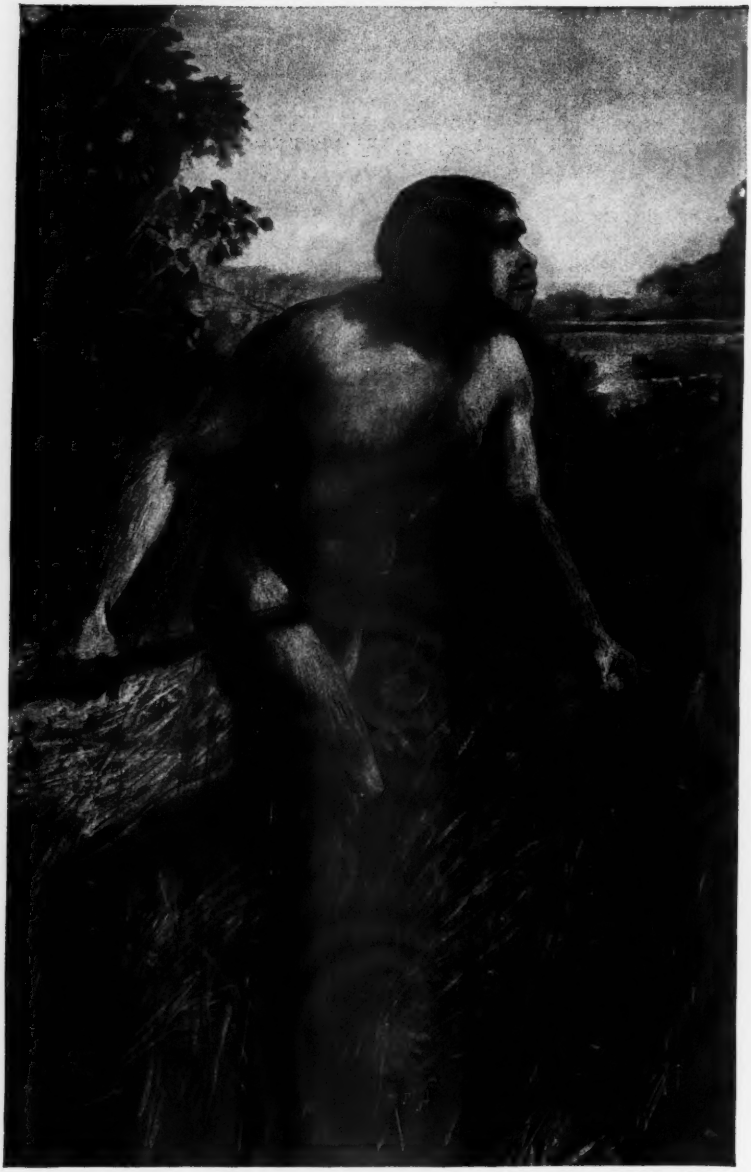
Professor at the Dental School of the University of Zurich

(LITERARY COLLABORATION BY GEORGE WOOD CLAPP, D.D.S)

ARTICLE II

The masticating functions of the teeth are to crush out the fluid portions of food, to separate and then cut up fibres, to isolate the cells and crush their cellulose walls and to aid in insalivating the food. All the teeth perform all these functions in some degree, but nature has divided the teeth into groups having differently shaped occlusal surfaces, in order that each function may be more perfectly discharged. Thus we have the incisors and cuspids as biters of food, the bicuspids as tearers and crackers, and the molars as mill stones.

Nowhere in the body has nature exhibited better the cunning of her handiwork than in shaping the teeth. In this chapter I want to tell you about the wonderful way in which nature has formed the teeth in groups as biters, shock absorbers, tearers and crackers, and finally as



From the Illustrated London News

PRE-COOKING MAN (NO. 1)

This illustration is probably as accurate as can be gotten. This man must have been about 5ft. 3½ in. high and could not assume the upright position of the present time. He obtained his food irregularly and with difficulty. He is believed to have lived 20 000 years ago

From the Illustrated London News

PRE-COOKING MAN (NO. 2)

This illustraton shows ancient man as reconstructed from the study of the Piltdown skull, upon which Dr. J. Leon Williams has done so much valuable work. We have no means of telling exactly when he lived but it must have been at least 20,000 years ago, perhaps several times that. He has the prognathous jaw and probably tore food, uncooked, from the mass

cutters and grinders. In the following chapter I shall explain how nature's laws have been discovered and applied to the formation of porcelain teeth which discharge these functions.

THE FUNCTIONS OF THE INCISORS

We speak of man before the days of written records as "prehistoric man." I should like to coin a phrase to describe man before the days of cooking and knives, by calling him "pre-cooking man." In his day, before fire was employed to soften food, and knives for cutting, the in-

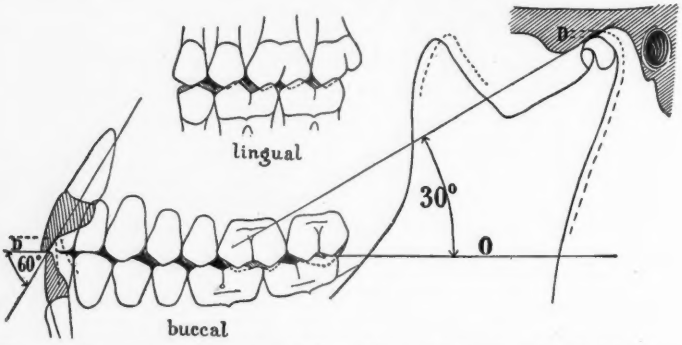


Fig. 1. Diagrammatic illustration of the positions of the teeth and the incising bite

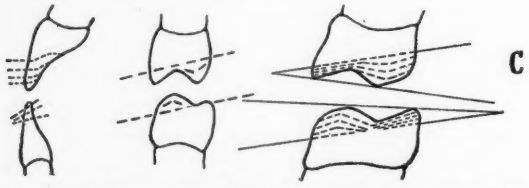


Fig. 2. The lines of wear of the incisors, bicuspids and molars are shown by the dotted line within the areas of the teeth

cisors were compelled to tear the mouthful from the relatively tough mass. Such work kept them large and strong.

In proportion as the use of cooking and knives has increased, the incisors have become less important in biting off food. They have become smaller and weaker. And there is reason to believe that nature is beginning their elimination. Two important functions, however, remain to them, to shear off such food as we bite, and as important accessories to clear speech.

To bite off food, the mandible is dropped and thrust forward, and then elevated with the lower incisors in end-to-end bite with the uppers, or in advance of them. The mandible is then retracted with the upper and lower teeth in contact.

In the unworn teeth of early life the edges of the incisors are often long and thin, and the lowers underbite the uppers deeply. In biting, the lowers often slide backward and upward on the lingual surfaces of the uppers for a considerable distance, thus continuing the biting action.

By middle age, the edges of both the upper and lower teeth usually show considerable wear of a kind which Balkwill, as long ago as 1866

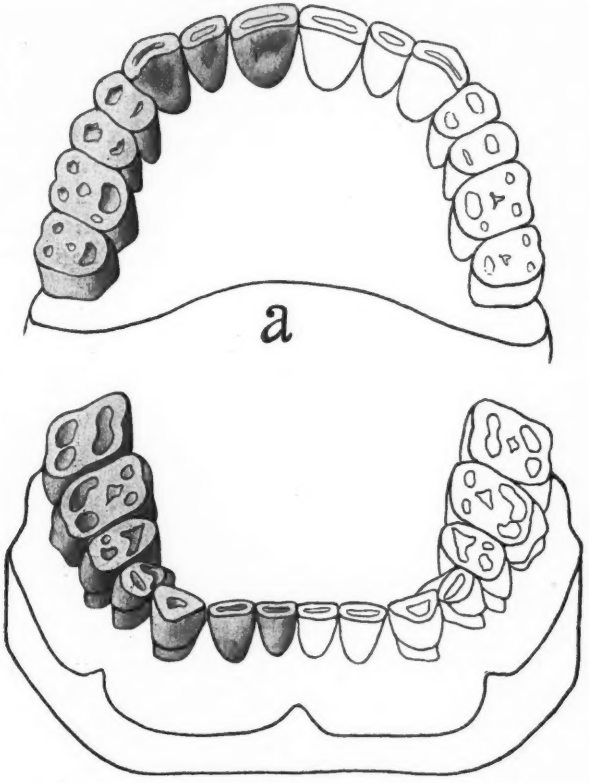


Fig. 3. Normal directions of wear upon the natural teeth

described as "self-sharpening." In some cases this wear continues until the incisors are brought into an end-to-end bite.

I do not think that the purpose of this wear is to sharpen the teeth. Nor do I think it increases their efficiency. I believe this wear of the incisors to be the natural result of the wearing down of the cusps of the posteriors. Nature is an engineer of consummate skill. She has adjusted the overbite of the several groups of teeth on an engineering basis. And so far as circumstances permit, she wears the teeth down so as to main-

tain the correct amount of overbite in the different groups of teeth. I believe the incisors are worn down so as to maintain the correct amount of overbite.

THE CUSPIDS

The two great functions of the natural cuspids are to guide the movement of the mandible in lateral articulation and to act as fulcrums for the mandible in grinding and cutting movements.

Let us look first at their function as guides during lateral movements. In well articulated dentures, the tip of the upper cuspid passes through the interdental space between the lower cuspid and the lower first bicuspid during lateral articulation. The thick edge of the upper cuspid then articulates exactly with the lower cuspid and bicuspid. At the same time the lower cuspid articulates with a facet on the cutting edge of the upper lateral. **The direction of the lateral movement of the anterior part of the mandible is determined, to a great extent, by this articulation.**

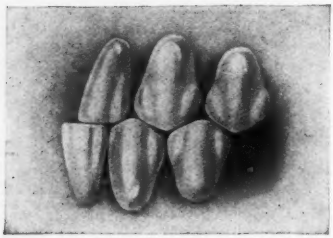


Fig. 4. Proper relations of upper and lower cuspids in articulation

When we study the articulation of the porcelain teeth, we shall see that the reproduction of this guiding function is most important to the success of the restoration. And we shall see how the difficulties which have heretofore prevented the achieving of the proper articulation and function of the porcelain cuspids have been removed, so that this effect may now be gotten.

THE CUSPIDS AS FULCRUMS IN GRINDING

The cuspids are the fulcrums of the mandible during grinding movements. This doctrine is so revolutionary that I have never before published it. But I am sure of its accuracy. You can easily prove it in your own mouth.

When the mandible is thrown into lateral occlusion to begin the grinding movement, **the biscuspids and molars pass out of exact contact and the pressure is all in the cuspid region.** If the mandible is slowly brought back to the position of central occlusion with the upper and lower teeth in articulation, two remarkable facts are noticed. The first is that although the powerful muscles of mastication are exerting great force, no sense of pressure is felt in the condyle region. Nature has not shaped the glenoid fossa to withstand any pressure from the heads of the condyles; the bone forming the articulating surface of the fossa is almost paper thin. The second fact is that the strongest pres-

sure is felt in the cuspid region at the beginning of the movement, and extends backward as the teeth approach the position of central occlusion, taking in first the bicuspids and then the molars. **Nature has used the cuspids as fulcrums on which to rest the mandible while the powerful muscles of mastication exert their force in grinding food.**

Nature has shaped the cuspids well to discharge these important functions. The roots are big and strong and are deeply seated in the process. We have accounted for this structure on the basis of their former canine character or their positions as keystones in the arches. But it is quite possible that their great strength is intended to permit the discharge of these functions of guides and fulcrums, which in the pre-cooking man, must have been decidedly arduous. Nature's arrangements for preventing the exercise of any crushing force on the thin articulating plate of the glenoid fossa are simple and ingenious. The upper part of the external pterygoid muscle arises on the sphenoid bone just anterior and internal to the eminentia articularis. It is attached to the anterior border of the interarticular cartilage which lies between the head of the condyle and the eminentia articularis. The posterior part of the capsular ligament attaches the posterior border of the interarticular cartilage to the back of the head of the condyle. The external pterygoid, the interarticular cartilage and the capsular ligament form a continuous band, so that the muscle is really inserted into the back part of the head of the condyle. As in illustration No. 5.

Contraction of the upper part of the external pterygoid muscle pulls the head of the condyle downward, forward and inward **and out of crushing contact with the articulating plate of the fossa.** Such pressure as mastication brings to bear in this section through the head of the condyle, is borne by the interarticular cartilage and not by the bony surface of the fossa.

The cutting edges of the upper and lower cuspids present, when slightly worn, facets which articulate very closely and are very important to the functions of the teeth. Their importance will be made clearer when we study the porcelain cuspids.

THE BICUSPIDS

The bicuspids are designed to stretch fibres and tear them apart, to crack hard or brittle foods, and to crush out the fluid portions of all foods.

Nature has cleverly placed these teeth at the points of their greatest possible efficiency. Fibrous foods reach them while the fibres are relatively long, that is before they have been cut into short pieces by the molars. The action of the tongue and cheeks tends to place these fibres

lengthwise along the row of teeth, from cuspid to molar. Now notice how wonderfully effective this arrangement is. The movements of the cuspids, the bicuspids and the molars in lateral articulation are quite different. The cuspids and lingual cusps of the molars come together before the lingual cuspids of the bicuspids come into articulation. The cuspids and molars hold the long fibres from slipping, while the bicuspids come down upon them. The buccal cusps of the bicuspids also come into articulation long before the lingual cusps do, and doubtless materially aid in holding fibrous foods in position for the tearing action of the lingual cusps.

The form of articulation in the bicuspids is peculiarly well adapted to tear fibrous foods and crack the brittle ones. It is not the smooth, sliding, always-in-contact articulation of the molars. At the first lateral

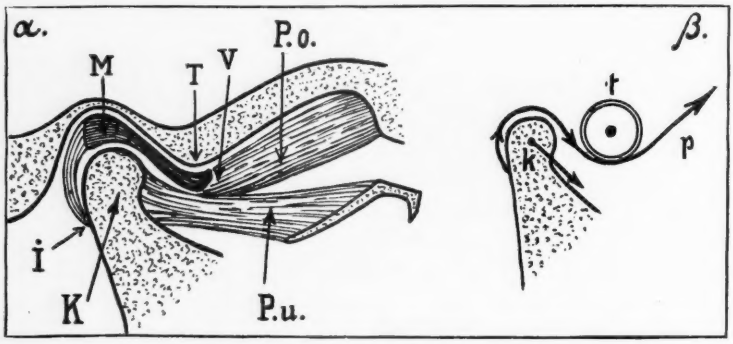


Fig. 5. Diagrammatic illustrations of the attachment of the external pterygoid muscle and its action upon the mandible. "K" represents the condyle. "M" the inter-articulating cartilage and "P. o." the upper portion of the external pterygoid muscle.

movement of the mandible, the lingual cusps of the bicuspids pass out of articulation. The lower lingual cusps appear to drop almost vertically from the uppers, while the buccal cusps are still in articulation. As the mandible returns to the position of central occlusion, the lower bicuspids appear to rise almost vertically toward the uppers. The sharp cusps are forced down between the fibres, almost without the rubbing contact which is characteristic of the cuspid and molar articulation. This action effectively separates the fibres.

The trap for grains and brittle foods which is formed by the occlusal surfaces of the bicuspids and the manner of their articulation, is so clever that its existence and operation have just been discovered. When the mandible is in lateral occlusion, the buccal cusps of the upper and lower bicuspids interdigitate to form a wall through which nothing solid can pass. **But the lingual cusps are separated by a considerable space**

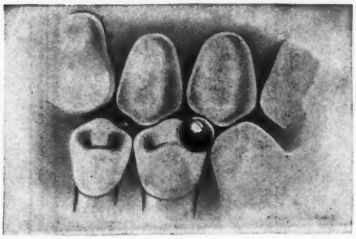


Fig. 6. Lingual cusps open to receive seeds and grains

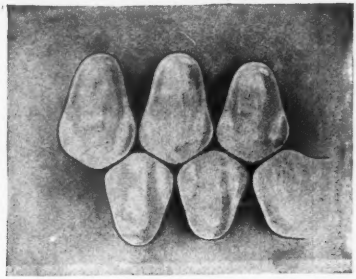


Fig. 7. Buccal cusps of the bicuspids interdigitate in articulation

into which the tongue can force grains and brittle foods. The forms of the surfaces are such as to hold firmly even the round grains which are so difficult to crush. And the peculiar opening and closing articulation of the bicuspids, which has been referred to, is most efficient in crushing such articles. This function has evidently been

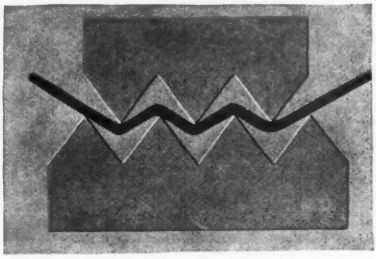


Fig. 8. Diagram of tearing action of bicuspids

taken from the meat-eating animals in whom these teeth are the bone crackers.

The bicuspids share with the molars the function of crushing out the fluid parts of foods. The peculiar articulation of the bicuspids makes them most efficient in this particular, and the deep escape ways which

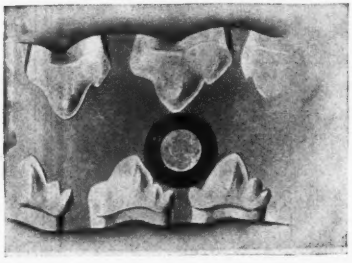


Fig. 9. The bone cracking teeth of the dog from which the bicuspids descended

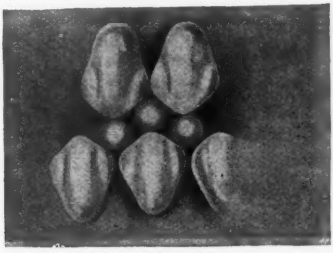


Fig. 10. The cracking action of human bicuspids

nature has provided upon the occlusal surfaces and between the teeth increase the efficiency.

THE MOLARS

The molars are the mill stones of the mouth. Nature has displayed here in a different way and on a larger scale the same engineering ability which we have seen exhibited in the more anterior teeth. She intended the molars to be the "balancers," the cutters of fibres, and the grinders of cellulose cell walls. She secures these ends by giving the molars

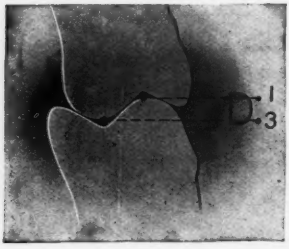


Fig. 11. Depth of balancing bite is from 1 to 3

Fig. 12. Relations of first molars in balancing bite

Fig. 13. The centrals have moved from the position shown by the central in dotted outline

broad occlusal surfaces, with cusps of carefully determined forms and elevations, and sulci and grooves whose extent, depth and directions have been established with equal care.

THE BALANCING FUNCTION OF THE MOLARS

The balancing function is that by which the molars on both sides of a denture come into the proper form of contact at the same time when the dentures are closed in lateral articulation. There are at least two important objects—to permit the exercise of much greater masticatory force than would otherwise be possible, and to distribute the really great force used in grinding food so that no one tooth shall become the victim of undue force and therefore of pyorrhoea.

The balancing function of the molars is made possible by the fact that the cusps of the upper and lower molars are of different elevations, not only as regards the actual heights of the cusps, but with regard to a horizontal line drawn across the mouth, from side to side. This fact is best shown in relation to the upper molars in illustration 12. As the mechanics of these surfaces must be described when studying porcelain teeth which are to function properly, no description of this most important feature is necessary here.

Nowhere in the whole realm of tooth formation and function are the unfortunate influences of cooking and knives more evident than in this balancing function of the molars. There can be little doubt that in the days when men lived on hard foods, the molars erupted in positions which permitted perfect balance. The earliest solid food of the child was hard. The crushing of it pushed the teeth into proper positions from the very first. The force applied in crushing such food quickly wore down any points on the cusps which prevented perfect balance.

But since we became cooks, all is changed. No longer do the hard foods form our principal diet. No longer are the teeth pushed into proper positions soon after eruption. No longer are the cusps worn down by such foods to proper balance. And this important balancing function of the teeth is now imperfect in most people. As the result of a recent search here in Zurich, I was able to find only one person in whom the balancing function was perfect. This was a girl who had recently come in from a country district where the food is almost wholly hard in character.

This balancing function is particularly important in artificial dentures.

THE CUTTING FUNCTION OF THE MOLARS

If you have ever seen the little pepper mills so common on the tables of our fathers, before ground pepper could be shaken at will from a box, you will have little difficulty in picturing the means by which the cutting function of the molars is established. If the series of wedges shown in illustration 14 be so placed that the point A is in contact with the point B, and then the upper block were held in its present direction and moved so that the point C came to the point D, each wedge in the block A would have cut along a wedge in the block B throughout the entire length of both wedges with a smooth movement, free from jumps or jars.

Nature has so designed the occlusal surfaces of the upper and lower molars, that ridges of enamel, not unlike the teeth in the wedge blocks, cross each other in a peculiar and efficient manner during the return of the mandible from lateral occlusion to central occlusion. No other

movement in the teeth is like this. No other movement is readily conceivable which would be as efficient. It is the principle on which our most efficient mechanical cutting machines are made.

This function cuts across the fibres which were separated by the bicuspids. The enamel edges which cut in this way are numerous and close together and the effects of their repeated action is to cut fine all fibrous foods which are properly chewed.

THE GRINDING FUNCTION OF THE MOLARS

Immediately adjoining the edges which are designed to cut up fibres and isolate cells are the surfaces which by rubbing together under pressure crush the cellulose walls of vegetable cells. This is the true milling action of the molars. These cells can be crushed only by being rolled between surfaces showing perfect adaptation, and under heavy pressure. Only by such rolling and crushing can the cells' contents be exposed to the saliva.

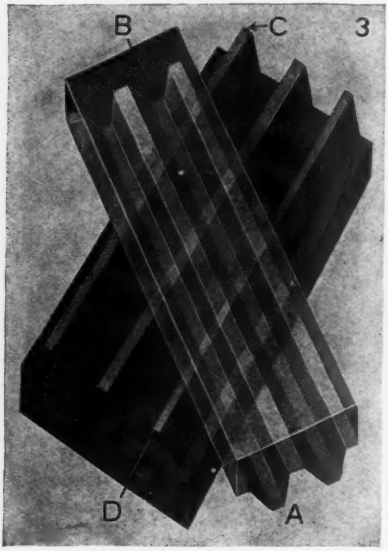


Fig. 14. Diagrammatic illustration of the cutting action exhibited by opposed ridges and facets in Trubyte molars. If the point A of the upper block be carried to the point C of the lower block, and then the upper block be so moved as to bring the point B directly over the point D of the lower block, each of the opposed ridges will cut throughout its length with a drawing motion. This is the longest and most efficient "cut" possible to these ridges.

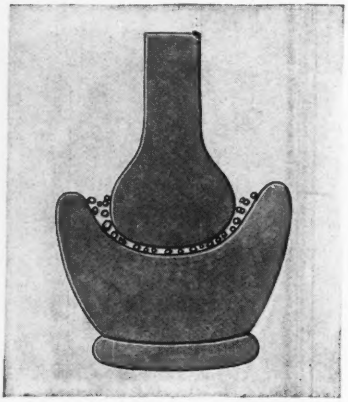


Fig. 15. Food cells are isolated and the cell walls broken by the rubbing together of the facets. The rubbing action is diagrammatically shown by the mortar and pestle in which substances are pulverized.

Recent discoveries in the processes of digestion have upset some old theories and removed some of our excuses for careless mastication. We have long thought that if we did not thoroughly grind the starchy elements of the food and properly insalivate them they would be cared for by the powerful digestive juices of the intestines. This is not the case. When we take a mouthful of starchy food, potatoes, any of the wheat derivatives, peas, beans, oats, etc., nature says to us "Now or never." If we do not properly grind it and insalivate it in the mouth, most of it goes through the system undigested. And its sugar contents are not made available to the body.

Nature is a good miller. She knows that mill stones, to be efficient must have many points of contact, but none of the points must be of large area. And so the molars, when at their period of greatest effectiveness, exhibit many pointed contacts, with each of the points but little more than an edge. Later in life these points are worn down, and exhibit greater areas of contact. Just in proportion as the areas of the points enlarge, the efficiency of the molars is reduced. And when the areas become broad, mastication is accomplished only by the exercise of much greater power than was required to achieve the same result when the areas of contact were small.

Curiously enough this fact has generally been overlooked. The molars have been thought most efficient when their surfaces had been worn into broad planes in perfect adaptation. We restore the surfaces of decayed teeth on that principle, by which means we rob them of much of their efficiency. Artificial teeth have been mistakenly formed on this principle. And we have ground teeth unnecessarily, in ignorance of the value of the forms we were destroying.

THE CRUSHING AND CRACKING FUNCTIONS OF THE MOLARS

These functions are shared with the bicuspids. Grains and brittle foods caught between the molars in the crushing movement are broken. And the fluid portions of all foods are crushed out.

(*This article is expected to be continued in the March number*)

PROSTHETIC DENTISTRY*

By Victor C. Smedley, D.D.S., Denver, Colo.

Dr. H. L. Ambler of Cleveland, Ohio, in Koch's History of Dental Surgery, gives us the following definition.

"Dental Prosthesis, is the science, art, and esthetics of restoring a lost dental organ or organs and their associated parts with an artificial substitute. Science is the classified knowledge pertaining to the speccialty; art is the skillful doing of the work; esthetics is the harmonizing of the restoration, and the case belongs to the prosthetist as soon as an artificial crown is required. The opportunity to create a demand for practical artistic dentures was never better than at present, and the development of artistic prosthesis is in the hands of the dental profession appealing to all, but accepted by few who have learned to love it for its own sake."

Prosthetic Dentistry is the oldest constructive dentistry, preceding any operative procedures by centuries of time. Specimens of more or less crude artificial teeth made from extracted human teeth, teeth of various animals, wood, bone and ivory are found among the ruins of practically all the ancient peoples. The Greeks were perhaps the most advanced as they were skilled in all the mechanical arts. The Hebrews never having been a mechanical people, and dental fixtures among them were pretty crude. They had artificial teeth, however, two thousand years ago. A law of the Talmud allowed the women "to go out on the Sabbath with their false gold or silver teeth." Some Rabbis allowed their people "to wear the silver false teeth since these appeared natural, but the use of golden false teeth on the Sabbath was prohibited." I think we ought to go them one better and make it a criminal offense to wear a gold crown on a front tooth any day in the week. Or perhaps it would be better to apply the jail sentence to the dentist who put it there. The Japanese were in ancient times, and are now, good dentists. The Chinese made artificial teeth many centuries before the time of Christ, although there was comparatively little need of such work with them, as their teeth were exceptionally sound.

A study of the dental efforts of these ancient peoples is interesting, but is of little actual value to us to-day, for modern dentistry so far surpasses anything recorded in ancient history that there is nothing in the latter to be learned or imitated to improve our work at the present time.

Coming down to more modern times, however, there is a great deal for the prosthetist of to-day to learn from the practitioner of yesterday,

*Read before Northwestern Kansas Dental Association Meeting, November 16, 1914.

when a large part of the work of every dentist consisted in the making of artificial teeth and men concentrated their best energy and ability upon the making of plates, and you might say all dentists were plate specialists. There were no commercial laboratories; and each man carried his own cases through from beginning to end without help, or possibly with one assistant. As a consequence, in spite of the many advantages and increased facilities that we have to-day for doing good work, better plates were made on an average thirty, forty or fifty years ago than are made to-day. Some of these old fellows mixed their own porcelain ingredients and carved, moulded and baked their teeth and gum forms for each individual case. How well they did it, you may judge for yourselves by an inspection of these two specimens made by Dr. Jesse C. Greene of West Chester, Pennsylvania.* Blocks, such as the large one, were adapted to metal plate by grinding and secured in place with rivets through the holes that you see. The small block is a biscuit bake, from which platinum pins have been removed. How many a poor fellow to-day, when making a special effort on some particular case to match an "unusual" natural tooth, after having looked through all the stock of all the supply houses available, without success, would not be thankful for the ability to sit down and make what the case requires?

Not long after Dr. Greene and others were successfully making their own porcelain teeth, the S. S. White Company began supplying the trade with block gum section teeth, which were essentially the same moulds they still make. And at one time practically every good dentist could sit down to an old footlathe with a set of these teeth and an articulator made of a barn door hinge, and grind perfect joints between the blocks, at the same time getting the correct occlusion and facial contour. They finished up a set of teeth that so far surpassed the average efforts of commercial laboratories to-day that it makes one sad to think what a grasp the laboratories are getting upon our prosthetic work and how helplessly dependent the profession is becoming upon them.

Why, it is a very usual remark to hear among our student bodies throughout the country as well as within the profession itself "I am not going to waste time learning how to do prosthetic work, because I will just send it all to a laboratory, anyhow. Life is too short for me to do the 'dirty work' when I can have it done so easy and so cheap and probably better than I could do it myself, if I tried." And so, that part of dentistry best calculated to call forth a man's better judgment, mechanical ingenuity and artistic ability, is turned over to a laboratory where at best the man doing it is handicapped by a lack of knowledge of the special requirements of the case—such as complexion, type, tempera-

*Specimens exhibited.

ment, contour and natural irregularities, not to mention the purely mechanical features of retention and occlusion, which cannot possibly be so intelligently considered or well carried out away from a close study of the mouth itself. This is the best that we may look for from a laboratory, if our work falls into the hand of a careful, conscientious, and skillful mechanical workman; but often it may be turned over to a mere boy who works blindly or like a machine, if not carelessly, turning back to us a piece of work that is a mere travesty on the best that the conditions present in the patient's mouth, would warrant.

I do not mean, however, to condemn the use of the best laboratories as assistants by men who are conscientious and thorough prosthetic workmen, doing the essential things themselves and directing and keeping in close touch with the laboratory man the while. It is quite possible, I think, for the result to the patient to be as satisfactory in this way as in any other. But it is the man who does not know or wish to know, the fundamental principles of prosthesis that I am condemning. A laboratory man once made the statement to me that "the majority of dentists are not capable of appreciating accurate prosthetic work; for a man can't appreciate work that is beyond his own knowledge and ability."

Gentlemen, if the majority of dentists are as inefficient as that, it is certainly a disgrace and we ought to hang our heads in shame before our fellowmen and before God.

As you all know, the average patient comes to us with implicit trust; and if a fixture is put into his mouth that is a positive detriment to him, he doesn't know the difference; and the dentist, if he is one of those referred to who is proud of the fact that he does not know prosthesis, in the bliss of his ignorance does not know the difference either; and when the patient's health is impaired through his inability to masticate his food and from the indigestion of decomposed food, pus and myriads of bacteria that thrive in the inaccessible ledges around ill-fitting crowns and in crevices, pockets and blow holes of unscientifically constructed plates and bridges; and the patient is afflicted with acute or chronic indigestion or appendicitis or peritonitis or ulceration of the stomach, or of the intestines, or by any one or more of the innumerable malnutritional ailments that mankind is heir to; then, the doctor also likely not knowing the difference between right and wrong dental prosthesis, dopes the poor patient with medicine or prescribes a rigid diet regulation. Or the surgeon—also ignorant of the primary cause—goes after him with the knife, cutting out the infected abdominal parts, while the prime offender, a foul and unsanitary mouth, with prosthetic fixtures that make it impossible to keep it otherwise, still holds the fort, and is liable to do so until it puts its unsuspecting host under the sod, because a dentist of good

standing—or at least one in whom the patient had faith—put the fixtures there, possibly not even cleansing the field beforehand, and certainly not giving adequate instructions as to how to keep it cleansed in future. He probably, however, charged a round enough sum for his effort to impress the patient with its value so thoroughly that he would not part with it for a pretty penny.

Like the dear old lady for whom I once had occasion to make a partial plate. She lacked several teeth above; I don't remember now just how many or which ones, but she had Richmond crowns on the two centrals which were badly affected with pyorrhea, very loose and elongated so that about a quarter of an inch of porcelain tooth hung below the lip line, above which was an eighth of an inch of band and above that fully a quarter of an inch of exposed root, and she was in imminent danger either of swallowing them or of having them drop out into her dinner plate. But when I suggested taking them out and including the centrals on the plate, she started to get out of the chair saying: "No you don't. I had those put in about fifteen years ago by one of the best dentists in the country and he charged me a good round sum for them, too. Indeed you won't take them out. I can't afford to lose them. They cost me too much money."

But some one will say that you cannot blame all filthy and unkept mouths on poor prosthetic work, for we all know that hundreds of thousands of mouths that have never contained a crown, a bridge or a plate are filthy and unsanitary beyond description.

The point that I wish to make is this—I do not believe any dentist has done his whole duty by his patient when he inserts a crown, bridge or plate until he has not only constructed and placed the piece in such a way that it may be thoroughly and readily cleansed, but has taught the patient how to cleanse it.

Physicians and surgeons of very recent years are waking up quite thoroughly to the importance of sanitary mouth conditions and we dentists are going to find it more and more difficult to "get away" with the "rough stuff" without having it come back at us in a way calculated to put us out of the business. And I tell you, gentlemen, the time is coming when the man who passes as an up-to-date dentist has got to be able to do this prosthetic work and do it right—or refer his patient to a specialist who can and will do so. And also, the sooner that every practitioner, medical and dental alike, comes to realize that it is no disgrace and no detriment, but rather an advantage to him personally as well as to his patients to refer all cases requiring special treatment to a specialist in that particular branch, the better it will be for all concerned and the nobler and the truer will be the work of our great healing art.

The thing of next importance to a good wholesome environment for prosthetic work, is occlusion. And with Bonwill, Snow, Gritman, Kerr, Gysi, Clapp, and others to supply us with anatomical articulators and teach us the fundamental principles upon which they are intended to operate, we ought to appreciate its value and at least make a conscientious effort in our prosthetic procedures to approximate an ideal occlusion. In every case, with both bridge and plate restoration, a balanced bite or sliding occlusion should be our aim, and frequently where teeth are elongated or bites shortened through extraction and migration with a tendency to lock the bite, the offenders should be ground, even to the extent of necessitating devitalization; and be built up with fillings, inlays, crowns, bridges, or plates, as indicated, until our ideal may be obtained. This does not mean that cusps should be obliterated so that our bite may slide upon approximately plane surfaces. On the contrary, the cusp forms, with the degree of wear normal in the mouth being treated, should be maintained so far as possible. I might mention in this connection that I consider porcelain surfaces for masticating, far superior to gold. How frequently have we all heard patients say, after having been supplied with considerable occluding gold, either in bridge, crown or filling restoration: "Doctor, when I close my teeth together it feels as though I were biting on a piece of leather or something tough and I don't seem to grind my food very well." I have been hoping for many months that some one of the manufacturers would supply us with a suitable posterior porcelain tooth for crown and bridge restorations. At present I am using a good many Dentsply Diatoric teeth of the anatomical moulds, grinding them to suitable shapes, but we ought to have something better.

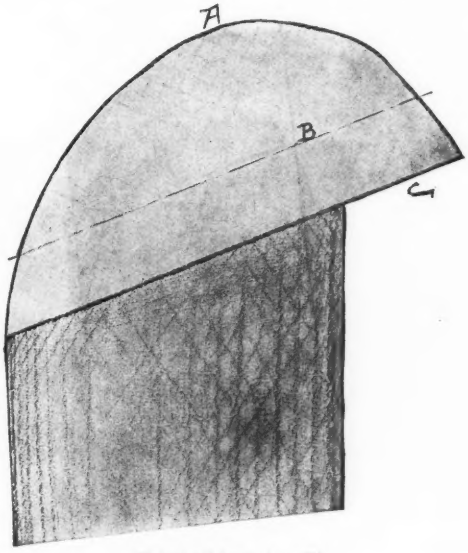
Great strides are being made in recent years and recent months in the line of improved tooth forms and shades and I believe it is only a matter of time when the dental idealist, esthete artist, endeavoring to imitate the beauty, the perfection and the imperfection of nature's dental organs will have supplied him by the manufacturers, everything necessary to that end—thanks to the untiring efforts of such men as Williams, Gysi, and Clapp.

Before passing to the mention of special prosthetic fixtures, I must have a word to say about roots and root-canals. For of our crowns, our bridges and of many of our plates or anchored dentures the root is our concrete foundation, and the root-canal is the underlying quicksand which too often injures, if not causes the destruction of our superstructure. Too much thought and skill and care cannot be applied to root-canals.

I believe that all root-canals, especially those in teeth that have been dead for some time whether or not canals are supposedly well filled, should

be studied and treated in connection with the X-ray, for the X-ray teaches us that root-canals filled by the very best practitioners in the world are very frequently imperfectly filled, with all too often, blind abscesses, if not fistulous abscesses, at the root apices. Thus with our failures revealed to us by the X-ray, each operator should be able to work out a technique that is the best possible *in* his own hands.

Now that our root-canals are disposed of and we have a rock foundation to build on, let us proceed. It is of course absolutely essential that roots to carry crowns either of the Richmond or all gold type should be



(Grind off from A to B)

trimmed to a cone shape with the largest diameter beneath the gum at or very near the peridental attachment. This, as you all know, is easier said than done.

I will show you at my clinic, stones, scalers and root trimmers that I find useful; but I constantly feel the need of a better instrument for this purpose. Practically every enamel cleaver and scaler of that type with which I am familiar, is unfit for use until the knife edged projection, has been ground off as short as the necessary strength of the blade will permit.

Time will not permit of my going into a detailed description in this paper of the technique of the various things that I will now touch upon, but if questions come to your minds as I proceed, I will be very glad to answer them later to the best of my ability.

I do not intend for one moment to assume that the procedures out-

lined here are the only or necessarily the best practice—but simply present them for what they are worth; methods which in my hands have produced results more or less satisfactory to my patients and to myself; which are subject, however, to constant change or discard for what seems, and can prove itself, better.

After the root is properly prepared, take a wire measurement with a Kirk dentameter. Cut and sweat (without solder) band of 30 gauge coin gold for narrow bands such as for Richmond crowns, and 28 gauge 22K for full gold crowns. Coin gold is best for narrow bands because there is very little stretch to it. While with ordinary 22K plate, a narrow band of this type, no matter how perfectly it may have been fitted once, will invariably be stretched more or less out of shape by the time it is finally cemented. With the wider band of a full gold crown, however, this is not necessarily the case.

The inlay is strongly condemned by many as a bridge abutment, but in many instances properly executed, it is certainly ideal. It frequently permits the retaining of the vitality of a tooth, saves the gum and peridental membrane from the irritation of a crown band, and permits the ideal esthetic effect—the appearance of a natural tooth unmarred by man's handicraft. All inlays should be made of pure gold with iridio-platinum reinforcement for bridge abutments. With a knife edged stone cut the surfaces of the abutments approximating the space, parallel, or slightly converging as they approach the gum. At least two-thirds of the occlusal surface of the tooth should be included in the inlay and if the tooth is loose so that there is a tendency in masticating to drive it away from the inlay, entire surface should be included.

Cavities should be made of decidedly retentive form with fairly deep straight sided grooves cut with a tapered fissure bur, and if the tooth be vital, a pit or pin hole on the far side of the tooth from the space to be supplied with a dummy.

If devitalized, drill at mesial or distal of pulp, as case may be, a deeper pin hole in pulp canal. If vital, pits should be from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch deep with tapering sides parallel with those of the grooves and all lines of the cavity. This, of course, holds true equally with the other abutment or abutments of the bridge—they must each line up very accurately with the first.

When cavity is prepared, take iridio-platinum wire 16, 17, or 18 gauge as case requires greater or less strength, fit to bottom of pin hole and bend to follow groove, cut off correct length to extend slightly through the inlay and lay aside. Take softened wax and press it into the cavity occlusally with a finger of one hand, and approximately with a finger of the other hand, trim excess with hot spatula. Now heat reinforcing

wire and melt it through wax into groove as fitted. Run hot spatula over entire occlusal surface, melting wax. See that occluding tooth is moist and have teeth closed and held firmly while you run burnisher over margins of approximal surface. Cool wax, carve cusp and fissure form of occlusal surface, remove model from cavity and cast with pure gold.

All bridge impressions should be taken with plaster—impression and bite in one mix. This is not only by far the best, most accurate way, but also the easiest way to get results. I think furthermore that all partial impressions and most full impressions for plates should be taken in plaster; though there are some full cases where modeling compound impressions made by the Greene method are undoubtedly preferable. In taking plaster impressions, always place a dam of wax at rear of upper tray, trying it in while soft to adapt to palate, thus preventing soft plaster from pushing out at back of tray into patient's throat, not only choking her, but often giving an imperfect impression where it is more important that it should be right. Always carry plaster with spatula and fingers high up around ridges and into palate, excluding all air before inserting tray. The same principle should be applied to lower impressions, especially partials, and if systematically practised it will save you many a second, third, and fourth trial, and prevent many a plate being made up over an imperfect or inaccurate impression.

It seems to be quite a usual custom in some of the European countries to excise teeth at the gum, instead of extracting, making plate to rest on the roots. We would do well, frequently, to adopt this principle (though not the technique) especially in lower mouths where when plate rests merely on the gum there is often so much resorption of the process; whereas a very weak root with canals properly treated and filled and fitted with gold cap smoothed off to gum contour and polished, will serve a very useful purpose for a long time in supporting the plate against direct downward pressure, being relieved of all lateral or other strain whatsoever.

The theory that teeth are better to stand alone where it is applied to teeth that are loose or with a migratory tendency, is certainly an error and the great principle that "In union there is strength" applies to teeth as well as to men, states, and nations. Bind weak teeth together with bridges, splints or bars and unless you do the work in a bungling manner, you will certainly prolong the life and usefulness of said teeth many years. To excise weak roots at the gum capping and connecting with clasp metal bars thus eliminating or minimizing lateral strain, is to use them to the best possible advantage for denture retention.

I might go on talking indefinitely about bandless crowns; copper amalgam for building up very weak roots; flowing solder; bridges and

bridge construction; lingual and palatal bar plates; the advantage of vulcanizing in a tin matrix; aluminum plates; gold plates; and continuous gum plates, etc., etc., but a man would be a fool indeed to try to cover the whole field of prosthetic dentistry in one paper, so I will now give way to the discussion with the assurance again that I will be glad to answer any questions.

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HUSBAND'S LIABILITY CONCERNING DENTAL SERVICES

By A. L. H. Street, St. Paul, Minn.

EIGHTH PAPER

Unless a married woman binds herself personally to pay for dental services rendered her, or there are other circumstances indicating a mutual understanding with the dentist that she, and not her husband, is to pay the bill, no claim can be enforced against her. At least this is the view which has been taken by the appellate courts of the country thus far in cases of this kind. The principle becomes an important one in two classes of instances which frequently arise: cases where the wife, but not the husband is solvent, and cases where it is sought to charge the husband although he has not expressly authorized the work to be done and has made no direct promise to pay.

In a comparatively recent Wisconsin case (Clark vs. Tenneson, 130 *Northwestern Reporter*, 895), plaintiff, a dental surgeon, sued a married woman for $40—the price of an upper plate of artificial teeth and a partial lower plate. The defense upon which this suit was defeated was that her husband was liable for the price of the work as an article of necessity. In denying plaintiff the right to recover, the Wisconsin Supreme Court said:

"The only question in dispute is whether the defendant's husband is liable for these sets of artificial teeth as articles of such necessity that he as husband is obligated to pay for them. This court declared what in general constitute 'necessaries' which a husband is bound to furnish to his wife, and declared that they embraced the usual provisions for the maintenance of the wife's health and comfort appropriate to her mode of life, in view of their social station and standing and his financial ability. It is a matter of common knowledge that artificial teeth are most useful and necessary articles for the promotion of personal comfort and health, and that their use in this country has attained practical universality.

We consider that such teeth come within the class of articles constituting 'necessaries' which a husband may be bound to furnish his wife."

In this case plaintiff contended that the parties understood from the course of the transaction of ordering, providing, and delivering the plates that it was an individual and personal sale to the wife and that she personally assumed to pay for them. But the court found that the facts and circumstances of the case did not sustain this claim, saying:

"True the plaintiff had no personal dealings with the defendant's husband. But this is not necessary, if the articles were purchased under circumstances indicating that they were supplied her in the usual manner as necessaries for which a husband is liable as such. The question is, Did the wife negotiate the purchase under circumstances indicating that she was authorized to do so? It appears with sufficient certainty that the defendant attended to the dental affairs of herself and other members of the family, including the payment of such bills. There is nothing in the record to show that she paid such bills out of her separate funds or estate. Presumably, then, she made the payments for the husband and father. This is sufficient to apprise the plaintiff of this fact, and he must be deemed to have dealt with her upon this basis, which showed her relation to the transaction. . . . Under the circumstances, we consider that it was established that the defendant was acting under the authority of her husband, and the court properly held that it was not shown that the defendant was individually liable upon the claim presented against her."

In a Vermont case (Gilman vs. Andrus, 28 *Vermont Supreme Court Reports*, 241), it was held that a husband was liable for a plate furnished his wife, if it was suitable to his station and circumstances in life, and procured while she was living with him, especially if he permitted her to retain the plate after knowing that it had been furnished, and if previous dealings between the parties warranted an assumption that she was authorized to have the work done on his credit. The court said:

"The fact that defendant did not then repudiate the contract and cause the plate to be returned, will render him liable for what it was reasonably worth. . . . Cohabitation itself furnishes presumptive evidence of the husband's assent to contracts made by the wife for necessaries suitable to her degree and estate. The assent of the husband arising from that circumstance may be rebutted; but nothing existed in this case at the time the plate was furnished that affected that presumption. The plaintiff, from the previous dealings which he had had with the defendant, had reason to believe that the wife was authorized to contract for the plate. . . . Plaintiff had been previously, and shortly before the plate was contracted for, employed by the defendant's wife

as a dentist, for which services the defendant does not dispute his liability. The defendant also had a previous conversation with the plaintiff in relation to furnishing the plate, in which defendant told him he should have the work done as soon as he was able. These circumstances, in connection with the fact that he permitted his wife to retain the plate during the whole period of their cohabitation, are sufficient to show her authority to make the purchase, and the defendant's liability, even if the plate could not strictly be treated as necessaries. We are satisfied, however, that defendant is liable upon either of these grounds."

The important phases of a husband's liability for necessaries furnished his wife may be thus summed up from the innumerable cases on the subject:

A husband is not liable for indebtedness when credit is extended to her solely.

As a general rule, he is not released from liability for necessaries furnished her by reason of the fact that she has money or property of her own.

The law presumes that he gives her authority to purchase on his credit all things necessary to properly sustain her in good health and comfort appropriate to their station in life. But, under the decisions, a dentist could not recover against husband for services rendered the wife, without the husband's authority, unless the services were reasonably necessary. Thus a poor man could not be held responsible for the price of gold fillings not authorized by him, where less expensive ones would have served the purpose.

When a husband gives notice that his wife is not authorized to contract indebtedness on his credit, a dentist who knows thereof will not be entitled to recover for services rendered the wife, unless it appears that the services were indispensable to the wife's health and that the husband made no provision for the furnishing of such services, either by offering the services of some other competent dentist or by supplying the necessary funds for that purpose.

The mere fact that goods are charged in the wife's name does not establish the fact that credit was extended to her alone, although it has been held that the act of taking her individual note does show that it was not intended that the husband should be liable.

Dost thou love life, then do not squander time, for that is the stuff life is made of.—*Poor Richard.*

SOME THINGS PHYSICIANS SHOULD KNOW ABOUT DENTISTRY

By Alonzo Milton Nodine, D.D.S., New York
Assistant Dental Radiologist, New York Nose, Throat, and Lung Hospital

THIRD PAPER

REDUCING DISEASE BY CLEANLINESS

If every time an apple is washed 75 per cent. to 90 per cent. of the micro-organisms on its surface are removed its infecting power is reduced to the same degree. Every time the mouth is washed, the teeth scraped, cleaned, polished, and brushed the infecting power of the oral cavity is reduced. Simple, plain, easily understood, reasonable proposition and every physician in the country should know and believe this.

If the diseases which these micro-organisms cause are preventable and controllable through the establishment of individual cleanliness and the exercise of personal hygiene, it seems the star crime of the Twentieth Century that this vestibule of life—the mouth—should be forgotten, ignored, neglected until it becomes a festering source of pollution to the whole system. The soft tissues are permitted to become diseased and the hard tissues are allowed to decay and disintegrate by the accumulation of bacterial and food filth, salivary calculus and mucoid deposits. And few mouths are more eloquent examples of this unwholesome and unsanitary condition than the mouths of some physicians. If they are so neglectful of such conditions in their own mouths what warning, advice, or instruction, is it possible for them to give their patients?

An unclean mouth is not only a source of infection to the individual but is a danger to those with whom the individual comes in contact. This unwholesomeness of the teeth and gums may cause the individual no discomfort or distress and may take years to produce its effects on the system, yet, cases are on record in which oral sepsis has produced septicemia and death in forty-eight hours!

There is a natural prophylaxis and an artificial prophylaxis, both of which are effective depending upon the degree to which they are practised. When both are neglected the result is disastrous to the teeth and the whole organism.

DISREGARD OF THE LAWS OF SANITATION, PHYSIOLOGY AND MECHANICS

Too frequently efforts are made to repair or replace teeth with a total disregard of the laws of sanitation, physiology, and mechanics to which they are supposedly conceived to conform. Too frequently they aggravate instead of alleviate the very condition which it is assumed they are

constructed to cure or relieve, and become worse food and bacterial traps and irritators of the hard and soft tissues than the original diseased organs. In such cases the patients' health would be better conserved were the teeth extracted and not preserved as transient monuments of either the weakness, the ignorance or the unskillfulness of their perpetrators.

Cleanliness in the intestinal tract we have been taught to believe is the keystone of every health improvement. Cleanliness is the foundation upon which rests surgical success. In the mouth, cleanliness, as a

"An unclean mouth is not only a source of infection to the individual but is a danger to those with whom the individual comes in contact"

necessary preliminary to either medical or surgical treatment, is neither demanded or enforced. Failure is often the penalty and the astonished sequel because of this neglect of mouth cleanliness and dental treatment.

Where is the pneumococcus, the tubercle bacillus, the influenza bacillus, the virus of scarlet fever, measles, croup, or mumps most frequently found? In the human unclean mouth. We are not astonished when Gordon tells us that he found in the mouth three hundred strains of streptococci and forty-eight different chemical varieties. And these are among the most dangerous of disease producing micro-organisms.

All of these micro-organisms not only infect and are absorbed into the open alveoli, the interproximal spaces and the mucous membrane of the mouth, but they are absorbed into the tonsils or drawn into the lungs or swallowed into the stomach. Constant and persistent doses of micro-

organisms and their toxines ultimately break down the resistance of the healthy human organisms.

Intestinal toxemia is undoubtedly the prevailing malady of the majority of civilized mankind. So many things may cause it that in the multiplication of minor causes, the two major ones, inefficient teeth and septic mouths, are overlooked.

The germs found in diseased teeth and septic mouths are swept into the stomach with solid and liquid food and infected saliva. While many of them are destroyed many pass into the intestines where they set up putrefaction and manufacture toxines and food poisons. These have a special predilection for the nerve cells.

First: They interfere with their nutrition and instead of normal nutrition, they are supplied with abnormal or perverted nutrition.

Second: The toxines and food poisons act as particular irritants and depressors of the nervous system. This explains the frequency with which intestinal toxemia causes or contributes to lassitude, melancholia, neurasthenia, cholera, epilepsy, and insanity.

ANEMIA

Among the effects that septic oral conditions may produce in the blood, anemia is the disease that is produced most frequently. Anemia is not due to the destruction of the red blood corpuscles but to their defective formation. The toxines that produce this result enter the stomach and so affect either the digestion, the absorption, or assimilation of food, that blood can not be made properly. The absorption by other channels from the mouth may also produce the same results.

When, for long periods, bacteria pass through the walls of the stomach or the intestines, the excessive action caused in the protecting cells of the liver, kidneys, and other organs and the effects on these cells of the bacterial toxines liberated in the process of destruction, lead to grave changes in the cells and the organs of which they are a part. These changes are believed to be those that cause hardening of the liver, the kidneys and the arteries. This is known as fibrosis or the excessive production of connective or fibrous tissue.

The absorption of and circulation in the blood of micro-organisms are responsible for rheumatic fever, arthritis and endocarditis. The micro-organisms are carried by the blood stream to the joints and heart. Here they produce those destructive changes which hitherto have been difficult to account for. In many cases the septic condition of the mouth has been definitely held responsible. The micro-organisms in the mouth and the joints have been compared and found identical. The sterilization and treatment of the mouth has effected an improvement in

or cure of the diseased condition. Without the treatment of the mouth the relief or cure of gastro-intestinal trouble by systemic treatment has failed and will continue to fail.

The tubercle bacilli and the pneumococci may also be absorbed into the blood from the entire elementary tract and transported to the lungs or other vulnerable organs of the body. The favorable conditions that exist in a septic mouth for the production of great quantities of these bacteria are frequently the original source of the infection. The same is equally true of the micro-organisms causing influenza and diphtheria and scarlet fever.

MOUTH BACTERIA IN THE STOMACH

The contribution of an unclean mouth to the cause of gastric disturbances is constant and direct. Careful and repeated examinations have shown the presence of mouth bacteria in the stomach regardless of its acidity. Septic gastritis, dyspepsia, gastric ulcer, and cancer of the stomach all may unquestionably be influenced if not caused by a septic mouth.

Mucous colitis and appendicitis are so frequently and so repeatedly found associated with a germ infected mouth that examination of the contents of the mouth, the colon and the appendix, frequently reveals the presence of the same micro-organisms in each. The mouth is perhaps the most frequent contributor to the cause of these intestinal infections because the gastric juice is not the impregnable defense we have been led to believe.

The diseased conditions which unclean and septic mouths cause or to which they contribute could be extended to considerable length. Many investigators and observers have borne frequent testimony to the fact that an unclean and septic mouth plays an important part in the cause or continuation of many destructive processes. In spite of this testimony the striking fact remains that to most physicians the mouth is a continent dark and unexplored. Apparently they regard its chief function to be a passage way through which food and drink may reach the stomach; or perhaps a *cavity the back of which* may be sprayed, painted, or gargled; or else an easy chute for powders, pills, and capsules.

It is not surprising that the average physician apparently knows as little about the measures the dental profession employs to protect the dental organs or the dental arch either in the way of prophylaxis or cure as he does about the importance or the necessity for such measures. The advisability and need for careful and frequent inspection by the dentist, the institution of prophylactic treatments and the suggestion of such diets as will assist in the preservation of the teeth free from deposits have not been entertained by the average physician.

So highly successful and practical is the preservation of the teeth free from deposits by prophylactic treatments, by dentists and dental nurses and by the practice of proper personal mouth hygiene by the patient, in combination with a suitable diet, that not only is the health and integrity of the dental organs maintained, but the entire physical economy is improved, fortified and often cured of diseased conditions by these means.

Perhaps the oldest known remedy for either the prevention or cure of disease is cleanliness. The cleansing powers of soap have been known since Mrs. Eve hung out her wash. But it wasn't until the nineteenth century that its intensive application was practised as a means of curing or preventing disease. If cleanliness, sanitation and hygiene can transform the diseased infected entrances of the Panama Canal from among the worst plague spots of the world into resorts as healthful as any of the northern ports on the Atlantic, then simple cleanliness, sanitation and hygiene can change the mouth from one of the most infected and unhygienic parts of the body into one that is wholesome, disease-free and clean, and eliminate it as a plague spot for the entire system.

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LOST OPPORTUNITY

There is a little story related of one of the bishops in session in St. Louis last year—a story which has no direct religious significance, yet one which has a wide application.

The Bishop in question was visiting in a city in which an ingenious city editor conceived the idea that it would be interesting to have his reporters ask certain notable people what they would do in the event that they could have their youth again.

The central figure in this little story was asked the question indicated. He is said to have become greatly enthusiastic upon the subject of being young again; but after looking the field over thoughtfully, he said:

"Well, if I could be a boy again, I think the thing I would be most careful about would be to have a dentist examine my teeth every month."

Not an entirely ideal thought, perhaps; but those who have heard the story have often wondered if a very considerable percentage of the world's troubles might be avoided, if everybody perceived the wisdom of the Bishop's idea.—*St. Louis Times* (*Oral Hygiene*).

PUBLIC SCHOOLS — OKEMAH, OKLAHOMA — NOVEMBER 1921

Chas. A. Hess, M. D.

GRADE AND AGE																									
NUMBER OF PUPILS	315	210	1	32	35	31	35	26	20	15	31	21	13	17	13	15	6	4	2	2					
NUMBER OF CAVITIES	160	150	2	7	14	25	29	22	12	16	11	12	6	10	9	5	2	2							
NUMBER OF CAVITIES IN TEMPORARY TEETH	96	103	2	7	11	24	23	20	11	8	10	7	4	6	3	2									
NUMBER OF CAVITIES IN PERMANENT TEETH	64	47			3	1	4	2	1	8	1	5	2	4	6	3	2	2							
NUMBER OF PUPILS WITH NO CAVITIES	60	87		7	3	11	8	8	10	14	3	9	4	2	1										
NUMBER OF PUPILS WITH CAVITIES TEMPORARY TEETH	237	213	4	28	33	42	27	24	20	7	7	5	1												
NUMBER OF PUPILS WITH CAVITIES PERMANENT TEETH	231	217		4	8	24	31	29	31	21	25	25	9	8	4	4									
NUMBER OF PERMANENT TEETH LOST	21	25						1	6	4	4	3	1	4											
NUMBER OF PUPILS HAVING LOST PERMANENT TEETH	18	18						3	5	4	3	4	1	4											
NUMBER OF FILLINGS	67	147		1	19	10	16	4	14	14	7	21	8	12	10										
NUMBER OF PUPILS HAVING FILLINGS	26	57		3	6	3	4	3	8	8	3	4	3	3	1										
NUMBER OF NEEDED EXTRACTIONS	134	129	1	1	14	24	27	13	14	4	12	9	4												
NUMBER OF PUPILS NEEDING EXTRACTIONS	82	93	1	8	10	17	20	11	10	3	4	5	1												
NUMBER OF PUPILS USING TOOTHBRUSH	207	282	3	20	34	39	36	29	29	29	20	24	8	6	3	4									
NUMBER NOT USING TOOTHBRUSH	113	167	1	19	81	19	19	17	20	16	11	4	5	4											

AVERAGES AND PERCENTAGES BASED ON ABOVE TABLE

PERCENT OF PUPILS NO CAVITIES	13	17		78	5	19	15	17	50	47	20	24	30	20	23										
PERCENT OF PUPILS WITH CAVITIES	87	81	100	77	95	81	85	83	80	53	80	76	70	80	67	100	100	100							
AVERAGE NUMBER OF CAVITIES PER PUPIL	4	4	5	4	5	4	4	3	3	1	2	2	3	2	2										
PERCENT OF PUPILS NEEDING EXTRACTIONS	21	30	75	20	18	29	36	24	30	6	22	13	7												
PERCENT OF PUPILS USING TOOTHBRUSH	57	63	75	51	61	67	65	63	59	58	64	62	61	60	100	100									
PERCENT OF PUPILS HAVING FILLINGS	6	11		7	11	5	7	6	16	16	9	18	23	20	33										
AVERAGE FILLING PER PUPIL	.07	.3		.1	.3	.3	.3	.2	.7	.7	.4	1.5	.5	.8	.4										

THE EXAMINATION OF SCHOOL CHILDREN IN IDABEL, OKLA.

When one considers the size of the town of Idabel, Okla., a population of 4,000, way off from nowhere and a population composed of people who have never had an opportunity to receive a dental education, the report here illustrated on opposite page, makes a fine showing.

The examinations were made by Dr. Charles A. Hess of Idabel, and when we realize that almost the entire work is due to Dr. Hess's exertions, certainly much credit must be extended to him.

The following is a part of Dr. Hess's letter to the *Digest.*

"We are gratified in many respects over the results shown in the examination of school children. The 52 per cent. of pupils using the toothbrush last year is high, due to the fact that we had the 'toothache' film, and also had the pleasure of talking to the pupils and to the county teachers at an association. This year you will notice an increase to 63 per cent. of pupils with cavities reduced appreciably; number of people with fillings increased, and on the whole very satisfactory results."

"It is a great work and stimulates business. You find startling things in 'looking down the mouths' of some of these pupils. I found about 50 per cent. with bad tonsils; in almost every case bad tonsils accompanied a diseased oral cavity."

Dr. Hess says he would greatly like to see more of the small towns take these examinations up, for it does produce results. It takes time, but not a great deal. In Dr. Hess's case it took but two school days to complete; one day at the central school and one half day each at the ward schools.

CREDIT WHERE CREDIT IS DUE

The editor is in receipt of a letter from Dr. Edgar D. Coolidge calling attention to the fact that part of the article "History of Operative Dentistry," reproduced in the December issue, and credited to the *Chicago Record-Herald,* was taken from *The Dental Review* of August 1913, without credit being given either to the author or the magazine publishing the article. This, of course, was unknown to the editor, and the article was here credited to the *Chicago Record-Herald,* from which it was taken.

WAR

IT WILL NOT HARM THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION

Before the beginning of the European conflict there were 42 foreign nations and 43 States and Territories participating in the Exposition. There has been no withdrawal, and Japan, the Netherlands, and Argentina have asked for additional space. Seventeen foreign nations and 22 States are building on the Exposition Grounds.

Both Great Britain and Germany, although never officially participating, will have large and important buildings and exhibits in spite of the war, as will France, Turkey, Canada, New Zealand, Australia and Japan.

Five neutral European nations have pavilions nearing completion. They are: The Netherlands, Italy, Denmark, Sweden, and Norway.

Three months before the opening day exhibits have arrived from England, Cuba, China, Japan, Canada, Australia, New Zealand, Belgium, Argentina, the Philippines, Hawaii and The Netherlands. Costly exhibits are pouring in from all parts of the world. A United States Government vessel is en route with exhibits from several European countries in the War Zone.

The Exposition is 97 per cent. completed and will be 100 per cent. completed on the opening day of February 20, 1915. It will be the first exposition of color and is the most beautiful ever built.

At this time the weekly attendance averages more than 60,000. The largest day was November 8th, when all pre-exposition records were shattered with a total of 37,109.

More than 300 national and international congresses and conventions have voted to meet in San Francisco in 1915.

The warship pageant will proceed through the Canal to the Exposition as originally planned, with President Woodrow Wilson and Admiral George Dewey at the head.

The Panama-Pacific International Exposition will be the most beautiful and the most wonderful exposition in history. Even if every country at war had withdrawn its exhibits the loss would be but about 6 per cent. of the total exhibits.

It is humanity's monument to peace and civilization.

Avoid shame, but do not seek glory,—nothing so expensive as glory. —*Sidney Smith.*

CORRESPONDENCE

January, 1915.

Editor DENTAL DIGEST:

So often in the American dental journals, which we, who are practising here in Europe so religiously study, I notice the question "Would you advise me to stick it out or move?"

I always seem to see that fellow as plainly as if he were standing before me because once upon a time I was in his shoes. I have practised dentistry now for fourteen years and it took me five years of that time to realize that I should never make a success until I had acquired more knowledge (and not the kind to be gotten in a dental school, either), but knowledge of how to deal with your patients from a business point of view.

So many young men in America graduate at about twenty-one years of age without ever having any experience in business or very little personal dealings with business men. Some of these men I admit can make a success of dentistry because they are born with a business instinct. They would probably make a success of anything, almost, in life, which they might undertake, whether of a mechanical nature or something requiring a mental strain. I was not one of these fortunate beings. In the grammar school and later in the high school, I was among the best. In the university I knew my work was good, too, but after graduation I soon realized my deficiency in business. It was the most awkward thing to talk business, and some clever businessmen patients are now no doubt wearing some of my work done at a low figure which they were simply able to talk me into doing by mentioning a cheaper man at the next corner, or suggesting that owing to the price being high they would come in the fall, or etc., etc.

I finally decided I would take a position with some successful dentist and learn the business side of my profession and I am still thankful that I did. In a few months I had learned that the business side of dentistry was half the battle. I have had now nine years of this experience and while in my five years of my own practice my time averaged about $1.00 an hour, it brings in since seven years, about $11.00 an hour. I am associated with one of the most successful dentists of Europe and am sometimes months alone and the practice goes on the same because I have learned the business side of my profession. Bad accounts are almost unknown now, while I have hundreds of dollars still standing out from patients I worked for in my beginning. Patients are nearly always willing to pay well for good work, but it is worth while to know how to get good prices and to collect promptly when payment is due.

For the man who is downhearted but feels his work to be up to the standard, I would suggest he take a position with some good successful dentist and learn the business end of dentistry. It might make him successful for life.

Yours truly,
GERMANY.

January, 1915.

Editor DENTAL DIGEST:

Your pioneer work in the phase of dentistry known as the "Business Side" has no doubt been productive of much good, especially in the many low-priced communities. I was reading a book lately, written by David Graham Philips and he brings out a point that I believe you have been trying to instill into the members of our profession. His principal character, a lawyer, is discussing with his future partner, a fee to be charged a prospective client and this is the gist of the conversation.

"If you continue to think in *small* figures, you will always remain *little*, if you think in large figures, it will aid materially in our ultimate success."

Don't you think a great many members of our profession think in figures that are disgracefully low when they figure the value of their services to patients? I have seen some very excellent work done for patients that netted the dentist who performed the services, about twenty-five cents an hour—and I hope your efforts have reached these dentists who lack the necessary nerve to charge what their services are reasonably worth.

Here's hoping the DIGEST will continue its good work for many years to come.

Fraternally,
W. C. T.

January, 1915.

Editor DENTAL DIGEST:

I have read your reprint of Dr. DeFord's article concerning his experience with the so-called Pressure Anesthesia clinics at Asbury Park in July, and I have been impressed principally by the spirit of hostility that he shows.

I was one of those who demonstrated at Asbury Park, and also at The Northeastern Meeting in Boston during October, and the same people who criticized our clinics in New Jersey were on hand at Boston, with the same arguments in opposition. It is a noteworthy fact that all of the gentlemen who have aligned themselves against this discovery of Dr. FitzGerald's are men who are employed in one way or another in the sale of auxiliary apparatus for the production of Anesthesia.

Some of the cases quoted by Dr. DeFord were directly misrepresented, notably the case of the patient whose tooth was fractured, and who, curiously enough, needed the administration of "Nitrous Oxide and Oxygen" before the tooth could be removed.

That case was not operated on by any of the "Three Zonatherapists" who conducted the clinic.

The most successful case that came under his observation, that of a gentleman of eighty years of age, was one in which I administered the pressure and Dr. Sears, an extracting specialist, removed a lower root which was not "very loose" but was normally embedded in the process. After three minutes of pressure on the inferior dental nerve the root was extracted, and the gentleman was overjoyed, saying that not only had he felt no pain, but he had not felt the operation at all.

The audience, consisting of about twenty-five reputable dentists, applauded and expressed admiration, especially those with whom I talked, but I heard not the least attempt at ridicule, notwithstanding Dr. DeFord's statement that there was a spirit of fun.

I witnessed many other successful cases, and I produced many, both at New Jersey and at Boston, and I am using this pressure successfully in my practice.

Of course, one cannot get as good results at a public clinic, where there are disturbance and interference, not to mention hostility, as in one's private practice, and it is not surprising that some of our cases at New Jersey were not entirely successful. We know, however, what Dr. FitzGerald has done, and we "Zonatherapists" know what we have done and what we can do.

We have nothing to sell to the dental and medical professions, but we have something that is immensely valuable in making our work easier for our patients and ourselves, and we are willing to show it for the asking.

Under these circumstances, if practitioners are really sincere in their "profession," and are earnest in their desire to relieve human suffering, they will investigate thoroughly this boon which Dr. FitzGerald has found, and there will be less hostility and better results.

Sincerely,

(Signed) JAMES A. LAWTON, D.M.D.
Middletown, Conn.

Editor DENTAL DIGEST:

I would like to know either by letter or through the columns of the DIGEST if there is any virtue in the home treatment of Dr. F. S. Willard of 37 So. Wabash Ave., Chicago, Ill.

I have two patients in my practice, one with pyorrhea, the other with erosion, who have answered his advertisement and I enclose herewith the third letter written to one of them.

She brought all the letters to me and asked my advice before taking the treatment and I told her I would try and find out something of his treatment and if there was anything in it I would be glad for her to take it.

She has a bad case of erosion and I have treated her as best I could and seem to be holding it in check, but I have told her it was hard to handle and I did not know whether I could stop it or not.

The other case also wants my advice before deciding whether to take treatment or not.

I certainly do not see how he can be honest and do what he says for $5.00.

Any advice you may give me will be appreciated; also any suggestions regarding the treatment of erosin by any reader of the DIGEST will likewise be appreciated. TEXAS.

January 12th, 1915.

Editor DENTAL DIGEST:

H. V. of Cleveland Ohio, in his article in the January Dental Digest among other things says "get paid for everything we do." Now I agree with H. V. about being paid for what you do but I don't agree with him as to the way of doing it. He says Mr. Ford would not give you two dollars worth of oil with a five hundred dollar purchase. In the first place we can not buy a car from Mr. Ford direct, and in the second place he gives his agents such a profit that they cannot only afford to give us the two dollars worth of oil but also burn up several dollars' worth selling us the car. Again H. V. says don't give a good treatment with a ten dollar crown. That of course depends. But I do think it proper and wise where we do a nice lot of work for a person whose teeth need cleaning and they will not pay for it to clean them *without* pay. I feel sure either that dentist or some other dentist will reap the results. I don't feel that I am cleaning a set of teeth for nothing where I have done a nice lot of work for a person that does not know the value of a clean set of teeth. If we don't educate such people, who is going to educate them? What better way is there of educating them than to give them the Missouri treatment (show them). Now I agree that we should get paid for all we do, but don't convince your patients that you are little and small in doing so. Every man in business that does himself and his business justice, most do a certain amount of educational work. J. F. M.

A SALIVARY ROMANCE

BY JOHN LYNCH McATEER, D. D. S.
Brooklyn, N. Y.

Down the duct of Stenson came a nifty saphrogenic dame
Singing as she paddled thru in a ptyalin canoe.
On the second molar tooth sat a zygomatic youth,
Enamel rod and breezy air, fishing in a fissure there.

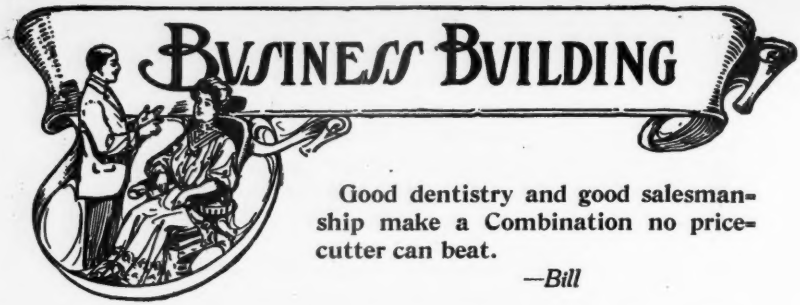
Same old story often told, this romantic microbe bold,
Favored by the law of chance, caught the bashful maiden's glance
And in bold bacillian style smole a microscopic smile
And beguiled this little spore to spoon upon the squamous shore.

Thence they wandered cross the ridge and loitered down by Bonwill's bridge.
There he told her tales of might, how he slew a leucocyte;
Swore by Buckley it was he who put the dent in dentistry.
Other things he told her too, facts that Miller never knew.

Tales like these are bound to turn the head and heart of any germ,
So, they wed and settled down on that second molar crown.
And he tilled from dawn till late the achers of his vast estate,
Toiled and slaved till setting sun in his pre "carious" vo-ca-tion.

Now when life seems most serene comes the villain on the scene.
Dapper mite he calls to see her, illusive "Duke of Pyorrhea"
Parasitic renegade, he tries to interest the maid.
Indignant to her soul within she threatens him with Emetin.

When love rejected turns to hate, woe to them that compensate;
Raging like a crazed spirilla he devastates the whole maxilla.
Plying arts and tactics ruth soon exfoliates the tooth,
Destroys this mitey swain and bride, a most efficient germicide.



Good dentistry and good salesmanship make a Combination no price-cutter can beat.

—Bill

SOME FURTHER THOUGHTS ON THE SUBJECT OF SELLING ONE'S SERVICES*

By R. E. Denny, D.D.S., Philadelphia, Pa.

Much has been said and written upon this subject, but it has not yet been squeezed entirely dry of interest. A great deal of good has been done by the discussion of it in the past and I hope that this discussion may bring out points that will be helpful to us in this very important phase of our work.

In order that any sale may be made, there must first be something to sell. With us as dentists that something is service, and while all dentists have services of some grade for sale, if sales are to be easily made they must be both of high grade and of considerable variety.

One who is capable of delivering to his patients, fillings, crowns, bridges, and dentures that are mechanically and artistically correct; who can skillfully extract teeth, correct malocclusion of the teeth, successfully treat pyorrhea, and by the modern use of anæsthetics perform dental operations that are ordinarily painful, without pain, has considerable for sale, and sales with him should be easily made.

The man who cannot or will not extract teeth, who refuses to regulate even the simpler forms of malocclusion, does not do porcelain work, who places pyorrhea among the incurable diseases, and is timid about the use of anæsthetics, has less for sale, and will miss many opportunities for rendering services to his patients.

The man whose ability is limited to the placing of poorly finished amalgam fillings, in poorly prepared cavities, to placing ready made crowns on indifferently prepared roots, who believes that cotton is as good a root canal filling as can be had, whose ability to make dentures is limited to taking the impression shade and the bite and work of this calibre, not only has little for sale, but it is of such quality that it is exceedingly difficult to sell.

So, no one who thinks, can fail to see how important it is if one wishes

*Read before the North Philadelphia Association of Dental Surgeons.

to establish a demand for his services, to perfect his knowledge and technique not only in all that is standard in dentistry, but to try out and use in his practice all that is promising among the new things. The greater one's ability to serve, and the larger the scope of one's dental attainment, the greater his opportunity for selling his services.

Having something worth while for sale, one must seek purchasers that to us mean patients, and to this end one should bend his efforts to become favorably known to as many people as possible. Through affiliation with business, social, religious and fraternal organizations, one has not only the assistance that these associations give in character building but they put one in more or less intimate contact with many people, and this gives him an opportunity to impress his personality upon them. One should become acquainted with the butcher, the baker, the candlestick maker, in short with any one who may be a possible patient.

Printed advertising will unquestionably bring patients, not of the most desirable perhaps, but surprisingly good ones at times. The viewpoint of the majority of the laiety upon dental ethics is very different from our own and the average person is not only surprisingly ignorant on dental subjects, but is usually much impressed with what he sees in print, and the educational truths of an honest man could be made much more impressive and convincing than the untruths of the average dental advertisement that one is accustomed to seeing. The misuse, however, of this means of publicity by the incompetent and unscrupulous of our profession is so general that it can be made use of at present only at the risk of losing the respect of not only one's fellow practitioners, but of many of the better element among the laiety as well, as they are learning to associate the dental advertiser with the quack. So while I believe it can be made a useful assistant in creating a demand for a dentist's services, it can be used at present only at the risk of losing caste.

After one has a nucleus, the surest and best and the way that we must in the main rely upon to increase the number of our new patients (for we must remember that with our new patients lies our greatest opportunity for service) is by impressing in every way possible upon those who come to us, the best side of our personality by striving to be pleasant and agreeable even among discouragements, making it a rule to try to have patients in a pleasant frame of mind, particularly when they leave the office, establishing whenever possible some bond of mutual interest, such as the existence of mutual friends or hobbies, encouraging their confidence by speaking of certain of their friends, acquaintances or neighbors who are among your patients, making them forget as quickly as possible that they are strangers, and by kind, careful and sympathetic treatment make them feel that they are your patients and you their dentist. This coupled

with skillful services will make them become the best of advertisers, for they will express their delight and appreciation to their friends.

In the actual sale of one's services, salesmanship is of more importance than is generally understood by members of our profession. Some things will sell themselves, patients being educated as to their needs in certain directions, others must be brought to their attention.

First, we must realize that we are especially trained and things that to us seem self-evident and commonplace have never even occurred to many of our patients. The dentist who merely delivers the service that the patient requests, not only fails in his opportunity but in his duty as well. We should not expect every patient to know that there is something more artistic for the anterior teeth than conspicuous gold fillings unless we tell them. Why should they know that a poorly finished approximal filling may cause pyorrhea, and the loss of the tooth or that they have pyorrhea in its early stages that should receive frequent treatment to prevent its becoming a menace to the life of the teeth and the health of the patient. They should not be expected to know that their partial plate in addition to being uncomfortable is damaging the adjoining teeth, and that a bridge could be made to replace it that would remove both objections, being a joy as to comfort and no menace to the adjoining teeth. It is not to be wondered at that they think dental operations are similarly done and that a uniform fee should be common with all dentists. It is here that salesmanship must come to our rescue; we must convince our patients that there is a great difference in dental services, that they depend upon the skill of the individual operator and that the services which *we* have to offer are superior ones. The most convincing way is to give them some proof that they may comprehend. Show them samples of the particular work in which they are interested, made as you believe it should be made (I use mounted celluloid models to show the specimens), explaining about the time and skill required, calling attention to the points that make it a superior piece of work. If they are still unconvinced and are inclined to compare your fee with some that they had heard of, show them some of the work that you have had to remove from the mouths of your patients, pointing out where and why they failed and they will understand why additional time spent in making work of a more permanent and artistic character is well worth the additional fee. This can and should be done without knocking any one, as that is inexcusable. Salesmanship is largely the educating of a prospective purchaser as to what is best for them and why, pointing out *their* individual needs.

If you find a filling whose contact point has not been restored and is a place for food to lodge, or is poorly finished at the gum margin, call attention to it and suggest that the fault be corrected by replacing it with

a new one. If you find a tooth with a sinus call attention to its seriousness and suggest its treatment. If a much filled and discolored tooth can be improved by crowning, suggest that it be done. *Never* fail to suggest a bridge when a suitable space exists. The patient may feel that they do not need it, but if you assure them that they do and explain why, their assurance will be shaken and they will probably suggest it at their next visit if they do not have it done immediately.

Don't ask them if they would like to have a bridge put in sometime. Tell them they *need* a bridge to fill in that space to prevent the adjoining teeth from tilting and losing part of their function, and not only to restore the lost teeth but to restore the function of the opposing teeth which were lost when their opponents were extracted.

Create in their minds the ideals which we hold for their teeth; paint the picture carefully and they will never be satisfied with the old order of things. Make it a rule to call attention to defects that can be remedied and to improvements that can be made whenever an opportunity arises, and most patients will recognize it in its true light as your sincere interest in their welfare and they will recognize your superior information in dental matters and you will be rewarded accordingly.

BEING A SUCCESS IN DENTISTRY

By J. C. Higgason, D.D.S., McLeansboro, Ill.

In considering the requirements that make for success we must first define success or have in mind a standard of success by which to go.

Some would contend that to be successful one must live for his ideals and be satisfied with nothing less; in other words, he must be an idealist; while others will claim that to be successful one must be practical; each of these of course would again depend upon the ideals in mind and upon what might be called practical. I believe however, that success like health, happiness, and all other good things lies in the mean and not in the extreme. One, of course, must have ideals, but while his head is in the clouds he must not forget to keep his feet on solid ground; that is, tho' we have a vision and are striving for a high and noble purpose, we must not forget that things about us are not ideal and that they must be dealt with as they are. It is better to fall short of our ideal than to fail utterly.

Glowing accounts of the wondrous success of some one person, or some specialist are of little value to the average, ordinary man. What you and I, and nearly all of us want to know is: What has the average,

serious, earnest, hard-working man accomplished? What kind of a home has he built for his family? How much money has he saved? What are his living conditions? Man's greatest problem—the first and most vital question of all people and places has always been and will continue to be his food supply and shelter—how to obtain the necessities of life—then the luxuries and pleasures, for some degree of luxury and pleasure is absolutely essential to all of us.

Much is being written these days in our journals about the ethical side, and the business side of dentistry,—the truth is you cannot separate them, they are one and the same; that is, a successful dentist is not only one who makes money, but one who in addition to making money and putting it to good use, also gives value received for same—who serves honestly and well his fellowman and the community in which he lives. One who evolves and grows as he works and with his shoulder to the wheel ever pushes forward and upward, endeavoring to loose from fettered man the shackles of superstition, selfishness, and ignorance.

Honorable methods, straightforward, square dealing, are in no line so essential as in the practice of dentistry. No other man so much needs the protection, the influence, the practice building power that rests solely under the sign of an upright, manly, give-and-take character, the lack of which, were all the facts known, would explain the reason for many a failure.

The statement is made and accepted as true, that 70 per cent. of the dental profession are poor men and that only 8 or 10 per cent. of our population have the necessary dental work done. There may be various reasons, for these conditions, but I shall speak of one in particular. Horace Greeley said, "The darkest hour in any man's career is that in which he fancies there is an easier way of getting a dollar than by squarely earning it." That is just the thing that too many dentists are doing. Down where I work money is rather a scarce article and people generally work hard for what little they get, so naturally when they spend it they want to get something for it. It is a frequent occurrence in my office to have a patient come in and want a tooth, which would be good if properly repaired, extracted because it is hurting. When told that they should have the tooth treated and saved they tell an oft repeated story: "I paid Dr.———, so much money to fix my teeth up not so very long ago and it was no good; didn't stay in long, but felt better when it came out than it did while in, so I decided I wouldn't spend any more money that way, because all I got for it was trouble."

No doubt every one here is familiar with the flat-sided amalgam filling with a rough, jagged shoulder under the gum, and the tin-can shaped crown which might fit any other tooth in the mouth as well as the one

it is on, and other work of like character. Now, mind you, this work was not done by advertising dental parlors, but by so-called ethical members of our State society. Much is being said these days in condemnation of dental parlors, advertising quacks, etc., which is all right, but I firmly believe there is more rotten work handed out by society members than by the so-called quacks, and any one who is candid and honest must admit that the arraignment of Dr. Hunter, of London, was all true. "He had our number" so to speak, although his application was perhaps unjust. It is not because we do not know, nor cannot do better, but because we are after that almighty dollar; the work is such that it is an easy matter to slip one over on the patient. Often, perhaps, also, it is caused by competition. Some dentists make the mistake of thinking that they must cut the price of their work to get patients—the result is poor work, for we all must acknowledge that within certain limits, the class of work we do depends upon the fee we are to receive for that work; and whenever a dentist gets to where he is afraid to ask a reasonable and remunerative fee for his work, lest he lose a patient, he is then and there nominated for membership in the "down and out club."

There is no problem so great for us to overcome as the problem of being afraid. In reality the only thing to fear is fear. A calm, serene, sweet-tempered disposition, sympathetic nature and mental poise are practice builders, and cheer is an asset. No one chooses to do business with a sorehead. Cheer spells confidence—confidence spells success. Gloom spells trouble—trouble spells failure. Men who fail are gloomy.

In a business journal the other day I read this "To make money you must satisfy your customers." So it is in dentistry.

In order to win you must serve. In order to help yourself you must help others. Lubricate the wheels of existence and the world will pay you. Elbert Hubbard has well said. "The only good that we can keep, is the good we give away."

We will take it for granted that to be successful one must know his business—he should know it from A to Z. Also he should have a clean restful, modern and well equipped office, and it should be kept that way, always.

One can find all the information he needs on the methods and technique of analgesia work, in the journals, so I shall not speak of that.

The elimination of pain in your work, however, will do wonders towards building a good and profitable practice, raising you to an enviable position in your community, conserving your strength and energy, and preparing the way for ease and contentment in your reclining years, as life's lengthening shadows herald the approach of your journey's end.

Business men tell us that successful business is as exact a science as is

geometry. Elbert Hubbard defines business as "supplying human wants." The dentist certainly supplies human wants; then I should say dentistry is a business and should be conducted in a business-like way.

The difference between a good and a poor preparation in business methods is just the difference between system and carelessness, between success and failure.

Occasionally it is necessary to refer back to some transaction two or three months previous, or more. Every transaction as it passes through our hands is perfectly plain and all its details are clear; but three months old, in the light of memory it is dim, confusing and unreliable. Hence the necessity of making accurate and permanent records.

To make a charge for work that will be just to the patient and to the dentist, one, of course, must know his actual cost in doing the work, which means, he must keep an itemized account of expenses as well as work done, and time consumed.

There has been considerable writing on this subject in our journals, and much figuring. Most of it, however, I think, has been taken from city practices, or else has been padded.

I am a busy dentist in a small country town and have kept an accurate record of all work and expenses since starting into business, though I haven't kept tab on my time as well as I would like to have done.

I am sure, however, that anyone who will keep a record of his work and an accurate, itemized account of the expense connected with it, will get a valuable hunch as to what he should charge a patient for a certain amount of work.

I shall give here the figures taken from my books for the year 1913:

Office rent, heat, and janitor service	$135.00
Telephone, light, and electricity	36.00
Assistant	172.00
Magazines and reading matter for office	18.35
Stationery and printing	11.25
Office laundry	26.25
Society dues and attending dental meetings	75.00
Miscellaneous, including taxes and insurance on equipment, incidentals, etc.	40.00
Making a total yearly expense, whether I work or not, of	$513.85

If I am comfortably busy, as I was during 1913 my gold, and dental supplies will cost me about $723.50, and other expense, incidental to running the business, and depreciation in equipment, about $144.00; making a yearly expense of $1,381.35 to run my business if I am working all the time.

In addition to this, my investment should pay me 7% interest. I do not believe we should figure the time spent in school or the money one might have earned during that time, as part of our investment, as some of our writers are doing, because whatever business or work one

may take up, he must necessarily prepare himself for that work, or if he had done something else for which he would have earned money, instead of going to school, he would not have accumulated the skill and knowledge which is given him as a stock capital, that he can never lose, and of which no one under any circumstances can dispossess him.

My College course cost me	$1,988.65
My office outfit, equipment and all	1,380.00
Making a cash investment of	$3,368.65
Which at 7% should pay me yearly	235.80

This added to our overhead expense ($1,381.35 and $235.80) makes an outlay, when busy, of $1,617.15 per year before we begin to get anything for our services.

Deducting Sundays, holidays, two weeks for vacation and another two weeks for dental meetings, we have left only 278 days in which to produce the above expense and whatever is to be left over and above that, for our salary; that is, every work day must bring in $5.81 before we begin to receive any pay for ourselves, and we must allow for lost time, dead beats, and charity work besides that. No dentist should work over eight hours a day, and a goodly portion of this will be non-producing time. If we keep track of our time, by a little figuring we can see about what we must receive for each producing hour of our time in order that our business shall pay us a definite salary.

I figured that during 1913 my business should pay me a salary of $2,500.00, which in our little town where everything is cheap, and the president of the best bank there gets only $1,600.00, is counted mighty good. And when all expenses connected with running the business was deducted from my cash receipts for 1913, I found that I had my $2,500.00 left, and a little more.

No certain rules can be laid down for collecting. Each patient is a law unto himself and must be handled accordingly. One good help is to keep your own bills paid up; and remember if you establish a reputation for making people pay, they will pay you much quicker; and many will bring cash when they get their work done who would otherwise try to stand you off. I would say, however, always "be just"—this is another place where common sense and courage will come in handy every day.

I do not believe in flattery, nor hot air (except in the air-syringe), but at the same time a judicious use of "soft soap" will often lessen friction and jar in the running of one's business and smooth over the rough and irritating places that will sometimes arise in spite of our best efforts; and I think the expression well chosen and appropriate, when we remember how a little soft soap applied at the point of friction on the old windlass and other such things back on the farm, would make them run smooth and easy. It will do just this in our business, sometimes.

In a paper read before the society for electrical development, Dr. Chas. P. Steinmetz, one of the greatest men in our country in his line, recently said that competition as an industrial and economic force is dead, and coöperation must take its place. Competition, he said died the day on which the advance of engineering had increased the means of production of a commodity beyond the maximum amount which could be consumed under existing conditions. Competition then ceased to be progressive and became a destructive and a disintegrating force.

That is, with the investment and overhead expense of a business it is cheaper to operate at exact cost or a little less, than it is to have it stand idle. The limitation of price forced by competition with our present industrial conditions is therefore below the cost of production, which can continue for a limited time only, and finally ends in the destruction of the industry.

Competition, then, which was one time the life of trade is now the death of trade, notwithstanding the fact that many of our political economists and university professors have not yet awakened to this economic law.

All this applies to dentistry the same as any other business.

What we need is to let coöperation take the place of competition. I believe one of the most important things this society could do would be to, in whatever way seems best, get together on this matter of fees. Our society, or subdivisions of it, should arrange a minimum fee bill and let anybody go as much above it as they care to and can, but see to it that nobody goes below it. I think this would be a boon to the profession, and by insuring a better class of work, would perhaps be a greater benefit to the public.

One of our ablest business men says "The most important factor in any business is 'advertising'" and the most important factor in the practice of dentistry is publicity which is the same thing.

Of course we all advertise, otherwise we would have nothing to do and in a great measure the most successful dentist is simply the one who has done the best advertising. We who are members of the societies advertise in such a way as to legally conform to the rulings of that society; that is through churches, clubs, personal mention columns in the local papers, good work, satisfied patients, etc., but it is advertising just the same. The fact that the society has placed a ban upon "paying" for one's advertising outright, is not only unprogressive and ridiculous, but also wrong, in that it keeps from the public its greatest source of information on so important a subject.

When we speak of a dentist advertising, the profession at once thinks of the vulgar and untruthful advertisement of some unscrupulous quack

who is able to advertise in this way only because of the stand the profession has taken. We should think of a dentist's advertisement in the same way we do of the advertisement of our best business houses—that is, an advertisement that contains information and truth, and that the advertiser stands back of with his reputation and honor.

This kind of advertising (which we cannot get unless we pay for it) would give the public the information for which they are waiting and would cause them to crowd into our offices in an effort to get at least a small part of the vast amount of work done, which the profession will be called upon to do as soon as the public begins to learn the need and value of oral righteousness; the relation between a clean, healthy mouth, efficient masticating apparatus, and a strong healthy body and vigorous mind; and especially, the difference between good and poor dental work.

. . . . . .

We all know that there exists in the minds of a great many of uneducated people the thought that their teeth are soft and will not hold fillings, and therefore it does not pay to have them filled. You must all be familiar with such cases; the only way that I can explain that thought is, that it was started by some incompetent dentists trying to explain the failure of their poor work.

The victim of a poorly fitting crown seldom knows that his tooth loosened and came out because of the ill-fitting crown, neither does he know that his mouth was unsanitary during the whole life of the crowned tooth. Now, when the public learns something about the difference between good and bad work, and why so much work fails, more dental work will be done, and the demand will be for good work.

Our State society is engaged in a publicity campaign. I donated my share to have a series of articles run in our county paper, and I heard three patients speak of some of these articles—that was all, and two of those spoke of them as advertisements. The public really isn't quite so ignorant and unsuspecting as we sometimes think.

Now these articles were all right—they were fine, but they didn't do the good that we had hoped they would; people didn't read them; they seldom fail, however, to read the ad of the three dollar a crown dental parlor, just the same as you and I read, the first thing when we get our dental journal, the advertisements and keep track of progress in our work.

Why not advertise in an honorable, legitimate way and pay the newspapers to put our information in such place and shape that the public would take a look at it? If we did, the three dollar crown dental parlors would soon go out of business, and the public would get more educating along our line in six weeks than it will in a whole year with our present methods of publicity.

Some one has defined advertising as "publicity plus salesmanship," which is about right and just what we need—in fact, it is just what the Illinois State Dental Society is trying to do, and the only thing about it that they seem to object to, is paying for it, tho' I don't know why we should be such beggars. We insist that our patients pay for what they get.

I know it is customary for newspapers, magazines, and those who write and speak, to say, not so much what they think themselves, but more what they think the public and those in authority want to hear, but I have, in this paper, tried to express my own ideas regardless of any one's else opinions, or the ideas held as sacred in the dead ages of the past. If it starts a discussion of these things or even causes you to think seriously upon them, I shall consider that my work, in this, has not been in vain.—*Oral Hygiene.*

SQUARE STANDARDIZATION

By Joseph P. Copp, D.D.S., Los Angeles, Cal.

A crowd of boys playing a game will immediately censure a fellow player who stoops to any form of unfair play, and upon his repeating the unfairness will force him out of the game and keep doing this until he either learns to play square, or they learn that he is incorrigible.

We are all grown up boys and girls playing a common game in different positions; by team work we accomplish a victory for our side, while, if we try too many individual grandstand plays, or if we try to slip some unfair plays over on the others, we fall for defeat in that particular section of the game. The winning of future innings rests entirely within ourselves—if we can come back strong and squarely we win—if we try the same tactics again, another inning is lost, etc.

Commercial men are the same—a man that runs his commercial business according to the rules of the game is respected and let alone, but the fellow that tries the unfair methods gets his censure and warning—if repeated he is forced from the game, some to stay out, others to come back honestly after their lesson, or if repeating, the other commercial "boys" consider him incorrigible, as they did while boys in the simpler games of childhood.

Professional men come under the same general rules if they would only so look upon it; if they play the game squarely their patrons and

fellowmen respect them and boost them, but once let them slip up and try to put over a few raw deals, and the grapevine, backfence telegraph works overtime passing their censure, by their fellow players, on to those in other parts of the game, and one word of censure takes some few hundred good words to overcome it, too.

Professional men—the same as commercial men—have to deliver the goods, if they expect to remain in good standing in the game. The professional man that goes into a store and makes a purchase wants an article that is to stand up under the use to which it may be put, and if it doesn't stand up, he knows that most products are in this day and age so standardized that he can get a replacement or his money back. That is the square way the game is played, the manufacturer has spent time and money to raise his product to a standard and if the article you have purchased does not meet the standard there has been some mistake and he appreciates your pointing it out to him, as he realizes the disadvantage of one unsatisfied customer in any community.

The sooner professional men (I do not say all for there are some who do conduct their profession in the most conscientious, standardized manner) realize the necessity of reaching a standard of perfection, and seeing to it that every product of their hands and brain comes as close to that standard as possible, the better it will be for all in the game.

The standard would be the same for all, and fortunate would be the man who by exceptional digital and mental skill could surpass the standard; that man surely would win the top round of the ladder if success in his community and all other points of the game being considered square and above board, he would deserve the position won.

Take any professional journal of to-day and read the scientific and some unscientific articles and they will tell of the numerous points in need of standardization. Particularly in our profession of dentistry is this more than true where work in the one mouth is done by numerous operators—at numerous different standards. Think every time you do a piece of work what it means—this will either be a word in my favor from the next operator who examines this mouth or it will be a just cause for censure on his part.

We all play the game, why not play it squarely, as we were so frankly taught to do by our playmates when we were youngsters? The game is more or less the same save that as we have broadened ourselves by individual effort, so the game has broadened out before us—a little more intricate possibly and surely a great deal more responsible.

When patrons come to me and tell me that old, old story of how so and so did a piece of work for them that after two weeks or more of conscientious effort on their part had proved entirely unsatisfactory and

upon their return, so and so had charged a sum for doing it over, only to be still unsatisfactory, therefore they had come to me hoping for better results—does that strike you as playing the game squarely on the part of the man that did the original work? The patrons had received nothing satisfactory for their money the first time and upon their return for satisfaction to have to pay again only to find themselves no better off. This is not an imaginary case in any sense. I have had an entirely too great a number of them and a great many I have had every reason to believe were speaking and displaying the truth of their dissatisfaction.

A professional man's time is only worth that which is charged for satisfactory work and any charge for unsatisfactory work, where it is so apparently his own unskilled fault, is dishonest and playing a decidedly unfair game. If a piece of work cannot be made satisfactory for reason of being outside the skill of the operator, he had better return the fee paid and admit it, thereby retaining the respect of the patron as well as of the next operator that handles the case.

I might insert here also that methods of getting around the issue or avoiding it by sending the patron to a specialist at operator's own expense—bargaining with the specialist to make the work net the first operator a professional discount, is hardly a square way of playing the game, as it places the specialist in a position where his patron has no monetary investment and therefore indifferent of results; making a decidedly difficult case for all concerned, with no appreciable profit for anyone.

The main argument of all ethical professional men when referring to the quack is that they are not only unskilled and not up to standard, but that they do not play the game squarely. Let us see that we who strive to conform to the ethics of our profession do play it squarely, and let the interest be on our side, that no patron may have any excuse to start the grapevine, backyard telegraph circuit in our censure.

Don't fool yourself into believing that the American public is fooled by any lack of ability on your part—for any length of time, for they are not. The publicity attained by the National Mouth Hygiene movement in the public schools has benefited the public already to the extent of making it more interested in the work of our profession. The more interested it becomes the less mysterious will become our work and more exacting will it become for its own good.

Don't forget Lincoln's remark that "you can fool some of the people all the time and all of the people some of the time but not all the people all of the time," and whatever you do don't fool yourself into believing you are playing the game square if you are only half standardizing your work.

PRACTICAL HINTS

[This department is in charge of Dr. V. C. Smedley, 604 California Bldg., Denver, Colo. To avoid unnecessary delay, Hints, Questions, and Answers should be sent direct to him.]*

TO AVOID LOSS OF TIME IN CASTING INLAYS.—In order to avoid loss of time while waiting to cast inlays after burning out wax, place the hot investment on a large metallic surface (I use a kitchen range cover) and the cooling process is hastened.—EDWARD D. RALPH, D.D.S., Jamaica, L. I., N. Y.

CLEANING TEETH AFTER SCALING.—In cleaning teeth after the usual method of scaling and each tooth has been completed, a mixture of pumice, peroxide and glycerin is of great aid in polishing. The pumice cleans, the peroxide whitens or bleaches, and the glycerin keeps the pumice from flying about.—ALOIS D. NEWBERGER, D.D.S., Chicago, Ill.

SILEX, OXYGEN, AND ZINC OXIDE TO POLISH TEETH.—I have found that in trying to mix silex (finest) (for prophylactic work) with H_2O_2 the result was always a dripping mass. By adding a little Z_2O_2 I find that "body" is given to the mass, and it also seems to *polish* the teeth more than silex alone.—ISADORE H. LAZARUS, D.S.S., Oak Bluffs, Mass.

TO REMOVE GOLD INLAY FROM TOOTH WITHOUT DESTROYING INLAY OR CAVITY MARGINS.—Drill small hole, size number four or five round bur, in inlay and insert "Morrison Screw." Place another instrument in the ring of screw and gently tap with mallet or another instrument. This method may be advantageously used where one anchorage of a bridge has become loose and the other inlay anchorage remains perfectly cemented. The hole in inlay may be filled with solder.—A. L. VAN ARSDALL, D.D.S., Kansas City, Mo.

TO REMOVE A SWAGED PLATINUM MATRIX FROM AN AMALGAM DIE FOR PORCELAIN FILLING.—A practical and generally successful method of removing swaged platinum matrix from amalgam die for porcelain filling is, after the burnishing and swaging is completed, to fill the die

*In order to make this department as live, entertaining and helpful as possible, questions and answers, as well as hints of a practical nature, are solicited.

with hot casting wax. Then, loop a piece of fine wire; heat the looped end and insert it into the wax, let set and then lift up overlapping edges of matrix, and pull the matrix from the die. If there is no undercut in the die, the matrix will come away perfectly, even if considerable effort is exerted in its withdrawal. The matrix can then be placed over Bunsen burner, and wax burned out completely. If wax is not drawn away from cavity proper, the inlay will always fit the die perfectly.—JAMES D. LOCHHEAD, New York, N. Y.

RECIPE FOR STICKY WAX.*—Try two ounces of resin, one teaspoonful of Venice turpentine, and one ounce of beeswax. Melt in order given, thoroughly melting the first before adding the others; stir thoroughly and pour into flat tins or make into sticks by pouring into tin foil tubes. To make the tubes, wind foil around a pencil and close at one end. If the wax is too brittle add more wax; it not brittle enough or soft, add resin. The Venice turpentine makes the mixture sticky. The surfaces to be united should be clean and dry.—IRVIN H. ANTE, D.D.S., Toronto, Ont.

AN EFFECTIVE ANESTHETIC.—Cocain is still the anesthetic of choice (with the writer) in most operations about the mouth. The following solution, under ordinary normal conditions, is the most effective I ever used:

Cocain Hydroc	gr V
Adrenalin	gr 1/12
Phenol	gtt. II
Aqua	1 oz.

With this I have removed fifteen teeth at one appointment with no pain and no systemic effect. When I am in the least fearful of the patient, quinine-urea is used. In opening an abscess, a spray of chloride of ethyl is very effective.

While novocain may be less toxic than cocain, it is also less effective in my hands and I fail to find any advantage in its use.—J. L. DUDLEY, M.D., D.D.S. Nueva Gerona, Isle of Pines, Cuba.

LIQUID SILEX.—I have found it very useful in the laboratory. Dissolve one part of water glass (15 cent tin at druggist) in two parts of boiling water; when cold it is ready for use. *Uses:*—It prevents the plaster from sticking to the vulcanite if painted on the plaster model when case is separated and ready to pack. Aluminum bases will not oxidize when going through the vulcanizer if coated with silex previous to flasking. *As a separating medium:* When flasking plates or repairs flow the first half of the flask and while plaster is moist paint with silex and immediately flow the second half. *On plaster impressions:* Place

*In November number E. G. asks for recipe for sticky wax.

the impression in a tin or bowl of water containing a little coloring material (indelible carmine). When ready to flow remove from the colored water and paint with silex and then immediately flow it.—IRVIN H. ANTE, D.D.S., Toronto, Ont.

LABORATORY HINTS.—1. An iron screw clamp such as carpenters use, size four inch, makes a good flask press. 2. A bright scratch on the vulcanizer thermometer at the vulcanizing temperature is an aid to reading it. 3. If a facing of the proper size is not at hand try baking on additional enamel to suit the case. 4. When excessively long facings must be used, grind off part of the enamel next the gum and bake on some gum-colored enamel, relieving the appearance.—J. B. REED, D.D.S., Longmont, Colo.

TO REPAIR OR REPLACE A BROKEN FACING ON A CROWN OR BRIDGE WHERE THE PINS ARE GONE.—Enlarge the pin holes in the backing to permit the passing of two small gold plated retaining screws (for sale at Dental Supply Houses). File the heads of the screws flat; clip off the ends of the screws to a proper length; pass the screws through the holes from the palatal side and retain them in place with oxyphosphate cement, and then build on a facing of synthetic porcelain. It is a simple and easy solution of a puzzling job.—D. W. BARKER, M.D.S., Brooklyn, N. Y.

QUESTIONS AND ANSWERS

Question.—I would be glad to have your opinion on which casting outfit the best results can be obtained, with either a Vacuum or Compressed Air Device, and if possible, would like to know the cost of the outfit you may recommend.—E. D. M.

ANSWER.—It is hard to say with what casting machine the best results can be obtained for it is my belief that it is not so much the machine as the "man behind the gun" that makes for the desired result.

We use in our laboratory, a home-made machine (total cost 30 cents) with which a wet asbestos pad is brought down firmly on top of flask with melted gold in crucible when steam generated provides pressure to produce cast. With this machine, my assistant since he has become expert in its use, almost never makes a failure. This steam machine is no good for acolite, aluminum or any low fusing metal, where there is not sufficient heat to create steam instantaneously upon contact of wet asbestos with top of flask.

If I were to choose between a vacuum or compressed air device, it would be the Elgin Vacuum or Pig machine made by Ransom & Randolph, Toledo, Ohio, and Paul V. Muckle's Compressed Air machine. Several

men in Denver are using this machine with entire satisfaction. If, however, you are going to do large castings such as full plates, I would advise the vacuum machine.—V. C. S.

Question.—Please advise me what is best way to remove thin tin foil from rubber plate.—W. T. J.

ANSWER.—Muriatic acid 50 per cent. will dissolve No. 4 tin foil from palate of plate in fifteen minutes to half an hour. Dilute nitric acid will do it quicker, but if too strong will injure the rubber.—V. C. S.

Question.—1st. Please tell me what you consider the best and simplest method of constructing a cast gold crown, as for a molar?

2nd. Also what is a "gold shoulder crown?"—W. L. H.

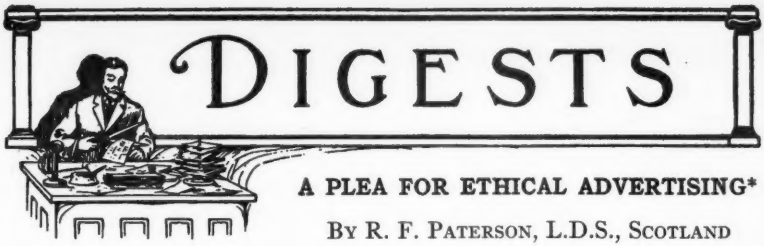
ANSWER.—With root prepared properly, with largest diameter at or near peridental attachment, fit band of 28 gauge 22K plate well under gum margin just avoiding infringement upon peridental attachment. Band should be ground to feather edge and polished so as to make as slight as possible a shoulder between root and crown edge. Now band should be contoured out well with stretching pliers and trimmed to miss occlusion. Now soften a piece of hard inlay wax such as Taggart's and have patient close teeth firmly. Remove and carve cusp form. Replace on root, warm surface of wax with hot air from syringe and have teeth closed in different positions, thus correcting occlusion. Chill, remove and suck with Roach carver or scrape with sharp instrument, excess thickness from inside the band. You can determine thickness with pair of calipers or by holding up toward light. If molar crown, place four sprues, one at each angle, and cast while flask is hot immediately after wax is burned out.

No. 2.—A gold shoulder crown is one where the root is prepared with a shoulder beneath gum and crown band is supposed to be fitted squarely against this shoulder coming flush with outside root contour.—V. C. S.

Question.—Will some one kindly inform me how to repair the face of a mirror which has been scratched with a stone.—D. N. L.

CORRECTION

Under Practical Hints—December DIGEST, 1914, page 737—the title of Dr. J. M. Porter's hint contains an error. It should read "How to remove the grime (*not gum*) quickly" etc. On second line the word "gum" should be grime.



A PLEA FOR ETHICAL ADVERTISING*

By R. F. Paterson, L.D.S., Scotland

When asked to give a short paper on this old and most unpopular subject I hesitated somewhat, fearing I should be treading on most dangerous ground, and I thought of the advisability of having a body-guard with me, considering the danger to be encountered by mentioning the very name of advertising before such a body of ethical dentists. If one could find another name that would not sound so harsh it might be better, so as not to grate against professional ideals, but why use a subterfuge when you cannot find a word to exactly express the same meaning? If you do prefer a softer word call it "publicity." When you come to think of it what does advertising mean? Its real meaning is taken from "Ad" to "verto," I turn; simply to turn towards. Can one of you point to any business that is really worth conducting that is not worth advertising? I fancy I hear you retort, "Ours is not a business, it is a profession." Do we not believe by our work that we are in a position to assist the medical man in combating disease? For by assisting our brother practitioner to that desired goal we are doing some good to the general health and if we can help the individual to a better physical condition are we not in the midst of a mighty big business? I should think so.

Now, I say advertise, but let it be honest, straightforward, legitimate advertising; let us act as gentlemen in the whole matter. I do not care whether you advertise as individuals or as a body, personally I prefer the latter, but let us go right to the public and let them know we are ready and able to help them, leaving out all personalities either towards the unregistered or between ourselves.

You have all had patients come to you who have told you that they called on So and So, and only the other day learned he was not a proper dentist; in other words, they went in absolute ignorance. Now, why can you blame them, if we who are in a responsible position will not give out a word of warning, why tell them after probably the mistake has been made? At several meetings lately I have heard it mentioned that the public went through their ignorance, I do not use the word in a vulgar sense, but simply that they did not know. I believe one dictionary says "to advertise" is to give notice, advice, or intelligence. What is there unprofessional or ungentlemanly in doing that, yet most of the dentists

*Read before the Glasgow Odontological Society.

PROPERTY OF DENTAL LIBRARY UNIVERSITY OF MICHIGAN POSTGRADUATE CLINIC GROVE

whom I have spoken to on this subject hold up their hands in holy horror and with a pious look on their faces condemn it at once; yet all the time they are themselves advertising. They are doing it by trying to secure the best positions in the best districts and by keeping up-to-date equipments in their dental offices (or if not they ought to). Is that not advertising? I believe that form of advertising is right and proper, nevertheless, we ought to go on with a larger scheme of advertising; get the true meaning of ethics, which is simply to be just to your patients, honest to your fellow practitioners and to yourselves. Blot that old false idea out of your minds that to educate the people to things dental is wrong. These things they have a right to know, and we as dentists should not only have the honor but it should be our privilege to impart them to them. That, I say, is professional and dignified, nay, it is our duty, and I make bold to say that the fault is largely ours that vast numbers of the public at this present time go to the unregistered for treatment. I ask you what is unprofessional or unjust in telling the public of those dangers of which they are ignorant, that may lead to ill-health and discomfort? Drop your petty differences as to how it is to be done and try to agree for once on a broad-based principle that something should be attempted, not for ourselves alone, but to place the public in a position to discern for themselves the difference between the dental surgeon and the so-called dentist who displays the words dental surgery, etc., simply as a blind, for the difference is so small when shown in print that only one connected with the profession is able to understand it.

We must go on with some scheme that will enlighten the public as to the position that we qualified dentists stand in regard to them; if we wish to gain that which is so vital to us—public support and trust—and that too before the question of dental benefits arises in connection with the panel. The unregistered practitioner will not, I believe, be prepared to work in any State dental service that will place him in a position inferior to ours, he will likely agree to work independently for the commissioners only, and not under any guidance from the L.D.S., for he will claim to belong to that section of the dental profession that has ministered most to the needs of that class of patient for whom the Insurance Act provides. They will then claim to be treated in the same way as the dentists practising before the Act of 1878. They will contend that no danger or disadvantage arose from admission to the register of those men, and they to-day are in a better position for acquiring knowledge in matters pertaining to dentistry than was the ante-1878 dentist, for this reason, that they have access to many more books on dentistry in general and also from the various courses of lectures they have themselves instituted, a fact which you cannot ignore and which

will stand them in good stead when the rupture in the profession comes to a head.

It is not only the industrial section of our community which is ignorant as to how dental matters stand, but even many of the well-to-do and so-called better educated. I give you one case in point—a schoolmaster, and a headmaster at that, in one of our largest schools and one whose pupils have attained to some of the highest awards in Scotland, only became enlightened after his own daughter had attended a quack. I pointed out the mistake he had made and said, "I should have thought that a man of your standing and education would have insisted on having qualified services." He told me he was not aware of the difference between registered and unregistered in our profession, but that in future he would see to it that any member of his family would have only a qualified dentist. "They might as well have the best when they are paying for it anyhow," were his own words.

Now I say it is right up to you, we must get out of the old rut in this Twentieth Century. There is no doubt that if people read things for themselves they are more apt to credit them than if you start to talk to them; for, probably, after they leave, they will only put you down as one good at blowing your own trumpet and assume most of your talk is prompted by jealousy.

Supposing you saw a man walking over an unstable and dangerous bridge, would you stand by and not warn him for fear of being unethical? Is that not what you are doing to-day? You are allowing men, women, and children to go into these pitfalls of dental quackery simply by your stubbornness of clinging to your old foolish ideas that should have been buried with the dead and long-forgotten past. I repeat I do not care how you tell them. Tell them facts—the whole truth and nothing but it will do; then, after that, if they still go headlong into the mire you can say, we at least have done our duty. You say you can warn the public when they call on you; in other words, do it in your own office: that has been the professional way for years and what good has it done? Practically none. With quackery so rampant and its growth so fast, why waste time talking to those who do come to you? It is that section who do not come to you you must get at.

Now this is my main point, I say we are failing in our duty toward the public in not making an effort to educate them to understand and realize that there is a difference between qualified service and unqualified. How can you do it other than by advertising? Go, then, gentlemen, tell the difference in simple, plain language, and do you not honestly believe that once they know and realize for themselves their mistake in the past and what is due to us, that 99 out of 100 would prefer to seek qualified

attention? I think that is the only conclusion you can come to, and you dare not issue a verdict against honest or straightforward advertising or publicity. Take the most conservative dental colleges of to-day; you find them advertising every year, and most of them go as far as to advertise right from the Dean, through the whole dental faculty down to the janitor. Why do they do that? Simply because they require to get new students to fill the vacancies left by the new graduates. But why not let those teachers and others connected with the schools be sufficient advertisement through their own professional services? Because they know that to issue a prospectus will be a help to secure their desired end, *viz.*, new scholars. Yet if one of those graduates dares to issue a simple announcement that he is commencing practice he is likely to lay himself open to be proceeded against by these governing bodies for infamous conduct of a most degrading character. I say that prohibition is inconsistent and unjust. Then advertise, and should the public not take heed we are not any worse off, and if they do we will then be in a much better position. I hear you calling on every side and at every meeting for legislation. I think if we once had public opinion and support on our side they would ultimately prove to be stronger than the law itself, and would some day force legislation in the right direction.

I may be permitted here to indicate briefly how it may be done. I think that in towns and districts the dentists should get together and arrange through the Press that all their names and addresses should appear in a paragraph in alphabetical order. It would probably be inserted three or four times a week all the year round and the expense would be equally borne by the individuals whose names appear, and the fact should be distinctly stated that all whose names are on the list are thoroughly trained and legally qualified practitioners. A small paragraph should be inserted indicating the reason they should look for the above names before entering premises to have dental work done and asking the public which class they themselves would wish to attend them, the qualified or unqualified. Then in large cities they could be divided into groups, and if one section say, in a better residential part, decided among themselves not to advertise or make themselves publicly known in any way save their present method of having a plate at their door, let them do that. It might also be advisable to have a central committee or council appointed to deal with all notices intended for the public press, thereby eliminating the risk of any section of dentists overstepping the mark and becoming unethical. That would act as a safeguard in any case, but I for one do not fear that any member holding the L.D.S. would make a flagrant breach or be otherwise than perfectly honorable and just to his fellow practitioners. Or, as an alternative, let the most prominent quali-

fied dental society undertake the intimation to the public on behalf of all the qualified men in or near its own district, and levy a toll on every L.D.S. to defray expenses. Now these are only suggestions and I am sure there are others present who could suggest a much better way. Any method adopted that is able to reach the public and give more publicity to the licentiate, publicity he so much needs and deserves, I shall willingly welcome and support. The whole matter is to warn and tell the people, so that those in need of our help will know for whom to look and where to go. I think by so doing we would be saving in many cases, a great deal of suffering and possibly a fair amount of their hard-earned money, from being lost through having inferior work and attention.

I now fear I am going to tread on more delicate soil. It has always been taught ever since I entered the field of dentistry that professional men ought not to place pecuniary gain first, but merely second, or even third, for the matter of it, and that such men as we should work purely for the good of humanity and the thought of financial reward should never enter our minds. Well, if that be so, such will easily see that to advertise will assist them to achieve their end more speedily, namely, by doing greater good to the greater number, and should there be others in this assembly who, like myself, are not only working with these high motives in mind, but also for the little financial reward that may accrue, it would also be of assistance to reach that end as well.

I believe the time is now ripe to undertake something of the sort I have tried to indicate, I fear imperfectly. I think that in conjunction with this new movement of public dental service now started in this city, and instituted by our worthy and honorable colleague, Dr. Noble, and which represents the practical side, a little in the way of imparting knowledge through a judicious form of advertising or publicity should go hand in hand. It was with that hope I decided to say something on this thorny subject of advertising to-night. One word more; if we do not make a move and try to teach the masses the main differences between those employed in the practice of dentistry, we are failing in our duty to the public, and the finger of scorn and reproach can only be pointed at ourselves. And in the near future we will be in the position of the man who had just remarked that he would give a great deal to get out of a fast-driven motor car when the car struck a post and he got out for nothing. To apply the simile, we will be like the man, the unregistered will be like the post and the smashed motor car the public. The public at the present time is cruelly indifferent as to how we stand, owing to our having previously failed in our duty towards them, and cannot be blamed if, at the time of crisis, a crisis that is sure to come, and possibly nearer at hand than we care to think of, they turn their back on us.

So I say take the scriptural dictum on advertising to your own selves, to let your light so shine before men that they may see your good works.—*The Dental Record.*

THE DENTIST'S EYES

By Thomas G. Atkinson, M.D., L.R. C. P. Lond, Chicago, Ill.

Did you ever engage in the old schoolboy trick of seeing who could hold out his arm the longest? Even if you won the contest, you did not make much of a time record; a few minutes, at the most, was all your muscles would stand of that constant, unopposed contraction.

Yet that is precisely the kind of thing to which you are subjecting your eye muscles all the time—especially the ciliary muscle, that little circular muscle which surrounds the crystalline lens in the eye and by its contraction changes the curvature of the lens, enabling you to see near objects clearly, and which is therefore called the muscle of accommodation.

There is no class of men who subject their eyes to greater strain than dentists. The nature and necessities of their work impose upon them three conditions of vision:

(1) They are obliged to work all the time at near point.

(2) They must have a detailed view of the small field they work on.

(3) They are forced to maintain steady vision, at one range, for long uninterrupted periods.

These three conditions involve a very trying strain on both the muscles and the retina of the eye. Dentists stand, for hours at a stretch, with their vision fixed steadily on a very small field, close to their eyes—almost at the end of their noses—doing the finest kind of mechanical work on the minute structures of the teeth. This means that—

(1) The external muscles of the eye, which direct it toward the object, are in constant, steady contraction.

(2) The ciliary muscle, which gives correct focus to the image, is in even more concentrated and persistent contraction.

(3) The retina, which receives the light upon its outspread nerve-endings, is under continued stimulation with a monotonous, nagging detail.

The wonder is that the eye stands for it at all. The arm would not, as we have seen. Fortunately, the eye muscles are better trained than those of the arm, and will stand a lot more steady effort. Indeed, a pair of quite normal eyes, in a healthy individual, can hardly be overworked as long as they are used properly.

But suppose the eyes are not normal? I do not mean diseased, but suppose their refraction is not normal. Then the constant muscular and nervous strain becomes a very serious matter, just as is a long-distance footrace to a man with a sprained leg. Then the eye muscle is overworked, and—what is perhaps worse—the adaptation between the various muscles and nerves, which normally work in perfect accord, is disturbed. The person is obliged to put additional power into this muscle or not quite so much into that, and so all are working under some kind of handicap.

Even so, the eyes will still manage to make good when they are not used much for close work. And even when they are so used they will often overcome the handicap for quite a long time; then they usually give out quite suddenly and utterly. Under the trying use to which dentists subject them, if their refraction is not normal, they *always* give out sooner or later.

It is of the utmost importance that the dentist satisfy himself that his refraction is normal; and if it be not, then it is imperative that he have his refraction properly corrected. Dentists are constantly advising people to make sure that their teeth are sound, especially if they live under conditions which are trying to the teeth. By the same token, dentists ought to make certain that their refraction is normal, in view of the trying use to which they are subjecting their eyes, and considering the importance of good vision as a part of their stock-in-trade.

There are three common errors of refraction, each of which gives its own peculiar train of troubles.

HYPEROPIA

This is the commonest error. The hyperopic eye is too short for its refractive power, so that light rays are focused farther back than normal. This means that the hyperope is under two handicaps:

(*a*) He has to contract his ciliary muscle more than normally to see near objects clearly, and this gradually induces permanent hypertrophy and spasm.

(*b*) He does *not* have to converge any more than the normal person, so that the adaption between convergence and accommodation is upset.

The result is a congestion of the eye and a nervous disturbance. The eyes become inflamed and bloodshot, the patient suffers with brow headaches and nervous irritation, and finally the overworked eye muscles give out and vision is blurred.

MYOPIA

The myopic eye is too long for its refractive power, so that the image is focused too far forward. This makes less than normal accommoda-

tion necessary for near vision. It might seem, at first blush, that myopia should not be a serious hindrance to near vision, but rather a help to it. And, in fact, it is not of itself as great a handicap to the dentist in his work as hyperopia. Its chief disadvantage lies in distant vision.

We must remember, however, that myopia involves just the same break in the relation between convergence and accommodation as too much muscular effort; and, furthermore, there is always a tendency on the part of the myopic eye to grow more and more myopic, and, in fact, to become diseased, if it is not corrected.

Myopia produces no headaches or congestion, as a rule, but causes nervous disturbances, and ought to be corrected.

It should be observed that both hyperopia and myopia may be overcome in near work for a long time, and thus remain unnoticed. The mere fact that one can see his work is no surety that these errors do not exist. Where they do exist, and are being overcome, it is at a serious cost of nerve and muscle, which will sooner or later have to be reckoned with.

ASTIGMATISM

The astigmatic eye is the most troublesome of all, especially when it is also hyperopic or myopic (compound astigmatism). It is, as its name implies, an eye the curvature of which is not the same in all meridians, so that rays cannot be focused at a point. This condition really has nothing to do with the eye muscles or their function, but lies in the shape of the cornea. However, it gives a very blurred image, which the ciliary and external muscles (especially the latter) are continually striving to remedy by twisting the axes of the eye. Hence the principal symptoms of this disturbance, outside of poor vision and nervousness, are a headache around the temples and back of the head, and dizziness.

Astigmatism affects far and near vision alike, is the least able to be compensated by the eye, and is usually associated with other errors. Happily, it is susceptible of the most accurate correction of all the errors of refraction.

I repeat, the dentist, in view of the steady, exacting strain which his work imposes on the eye, and the imperative part played by good vision in that work, cannot afford to take chances on the handicap of an error of refraction. It ought to be a routine part of his preparation for the practice of his profession to undergo a thorough and competent examination as to his eye refraction; and if any error exists, however slight, it should be carefully corrected and his eyes rendered normal before he sets out upon his life-work.

Not only does the dentist recommend his patients to undergo periodic examinations of their teeth to make sure that they are sound, but he

enjoins upon them a constant care of the teeth and gums to keep them in good condition. So, also, when the eyes are normal, or after they have been rendered normal by proper lens correction, there still remains the necessity of watchful care of the eyes under the trying exigencies of dental work. For even normal eyes will give out if they are abused, or subjected to hurtful conditions of usage. I therefore append a few brief, simple rules for the care and hygiene of the eyes, which I hope every dentist will keep in mind constantly and make a part of his daily habits:

The eyes must be protected from dust. When riding in an automobile, goggles should always be worn. In any case, it is a good plan to wash the eyes thoroughly every evening with copious flushings of warm boric acid or normal salt solution.

Exposure to sudden extremes of temperature and to high winds is to be avoided. When obliged to face sudden changes of temperature, the eyes should be closed for a few moments until the conjunctiva gradually becomes cooled or warmed, as the case may be.

Infection, to which the membrane of the eye is exceedingly sensitive, must be scrupulously guarded against. Everything which touches the eye—including the hand—must be perfectly clean and sterile.

The dentist should have his work on a level with his eyes, as much as possible, so as not to pore over it with head bent downward. Such a posture induces congestion of the eyeball. This applies especially to myopic persons, for by this posture myopia is often made progressive and malignant.

Work should be done in daylight whenever possible. When it is not possible, daylight should be reproduced as nearly as practicable with indirect, well-diffused artificial light.

Good illumination is imperative. The inadequate intensity of an image made upon the retina by insufficient light requires that the image be held there for a proportionately greater length of time, and thus musculature and the nervous system both suffer.

Too much light, however, is almost, if not quite, as bad as too little. Teasing of the nerve-ends of the retina quickly inflames and exhausts them, and retinitis or retinal neurasthenia ensues.

When working on glittering materials, such as crowns and plates, it is well to protect the retina by wearing slightly tinted glasses.

Strong light should never be faced. This is offset by wearing an eyeshade.

The eyes must be given frequent short rests by removing them from the work and relaxing their accommodation and convergence for a few moments by looking into the distance.—*The Dental Cosmos.*

AN EPITOME OF CURRENT DENTAL LITERATURE

[*The Dental Cosmos*, December, 1914]

CLINICAL REPORT UPON AMŒBIC PYORRHEA

By M. T. Barrett, D.D.S., Philadelphia, Pa.

"Those engaged in the study of endamœbæ in pyorrhoea neither have held nor now believe that all cases of pyorrhea are due primarily or alone to the presence of the oral endamœbæ."

But "these parasites have been found in the contents of pyorrhea pockets almost uniformly; yet there have been a few cases in which they have not been discovered."

"The presence of this protozoa in so large a proportion of pyorrhea pockets and the disappearance of the suppuration under appropriate treatment with emetin have served to justify the claim that they are the immediately important factors in an overwhelming number of pyorrhea cases."

"Bass and Johns of New Orleans found endamœbæ in 85 out of 87 cases of Riggs' disease examined by them."

Microscopic Examination for the amœbæ prior to the employment of emetin is made as follows:

"A small portion of the purulent contents of one of the pockets is taken up on a suitable instrument such as a flat stiff scaler not more than from one-tenth to one eighth of an inch in width, and this is diffused in a drop of slightly warmed normal saline solution deposited on a warm slide. This preparation is covered with an ordinary thin cover-glass, and the fresh and unstained material examined at once, without further preparation, using a 4 mm. objective."

"The organism in its living state is a gelatinous-looking cell, ranging up to about 30 micromillimeters in diameter, moving in characteristic amœbiform manner, and thrusting out, here and there about its periphery, one or two thick lobose to digitate pseudopodia, with a distinct but scant entosarc (best seen in the pseudopods and about their bases), and with a granular and more or less vacuolated entosarc. The nucleus is practically always invisible in the unstained specimen; in stained preparations it is small in size and contains but little chromatin, in grains or scant threads. The nuclear membrane is thin and poorly defined, and the karyosome small. In the cytoplasm there are, at least in the larger examples, and as a rule best seen after staining, numerous coarse ingested bodies, remnants of leucocytic nuclei, of red blood cells, and often a large number of bacteria. Undigested red blood cells are occasionally seen in the living amœbic body; but these, if watched only for a few minutes,

rapidly disappear owing to the effectiveness of the amœbic intracellular digestive agencies. The writer does not hesitate to advise that in all cases of peridental suppuration in which endamœbæ are found, emetin should be used, either alone or in combination with other selected measures."

Mode of application of emetin hydrochlorid one half per cent:

The remedy, in the opinion of the writer, for pyorrhea alone is best administered by local application to foci of suppuration about the teeth. Where there is a wider distribution of the parasites, as in the tonsils or elsewhere, and where systemic complications exist, the hypodermic administration of the remedy is to be advised. The solution is introduced in the pyorrhea pockets with an ordinary hypodermic syringe with a straight or curved needle as needed so as to gain access to all parts of the pockets. The point of the needle should pass along the root of the tooth to the bottom of the pocket, merely engaging with the wall, and be carried about to all of its parts."

"Each pocket in turn is thus filled with the emetin hydrochloric solution; and the writer believes it to be good practice to apply the solution also to parts which according to gross examination are not involved —as into the interdental spaces and around fixed appliances. Treatments which thus include all recognizable pockets and special parts under suspicion should be repeated daily for at least five days, and thereafter every other day until about ten treatments as a total have been made, as a general rule. Microscopic examination of scrapings from the pockets should be made from time to time for persisting endamœbæ as the treatment progresses, and this, together with the general appearance of the lesions, will determine the appropriate duration of the period of treatment. In some of the less marked and less chronic cases, a total of five or six applications or even less may be sufficient, while in the more stubborn instances treatment must be continued even longer than above indicated."

"A one per cent. solution of iodine in normal salt solution" is recommended "as an adjuvant in refractory cases."

In cases in which the teeth are loose "the writer would prefer to depend upon natural fixation, which begins to appear early in the treatment, than to the employment of definite mechanical devices."

"The question of cleansing the teeth and of removing tartar, again, is an important one. In every instance the procedures must be carried out with the idea of producing as little mechanical disturbance as may be, so as to avoid as far as possible any dissemination of the micro-organisms into the adjacent region and of disturbing any of the delicate tissues which may be in course of regeneration about the root. The writer, in

many cases, would not attempt any effort to remove tartar until the tooth has become more firmly fixed, and at best believes that he is proceeding most safely by scaling off only a small portion each day, so that by the time of completion of the period of treatment the teeth will be in a clean condition."

"In all, to the present time, the writer has used emetin as above outlined in seventy-three cases. This does not include the cases now in course of treatment, or several who, for special reason apart from any question of dentistry, interrupted the routine course. Of these seventy-three cases, all but one may be said to have been cured of pyorrhea, and to have now, as far as re-examination has been possible, the peridental tissues in a good healthy condition."

"From a very limited experience it would seem that the fluid extract of *chaparro amargosa* used as a mouth wash, as suggested by Dr. Smith, is of value in destroying oral endamœbæ but it possesses marked bitterness preventing its wide acceptance until successfully concealed. Should it prove from further trial to merit recommendation, efforts to prescribe it in more palatable form will be made."

FURTHER STUDIES ON NOVOCAIN-SUPRARENIN ANESTHESIA

By Richard H. Riethmuller, Ph.D., Univer. Pa. D.D.S., Philadelphia, Pa.

From a careful review of the literature dealing with local anesthesia the author believes that the dilatory and cautious adoption of novocain-suprarenin in local anesthesia in the United States was due to three causes.

1. The fear of the public and careful dentist due to the utilization of the treacherous alkaloid cocain.

2. Failure following (*a*) Lack of the appreciation of the physiological and anatomic premises upon which all methods of producing this anesthesia depend. (*b*) To the neglect of asepsis of the solution, instruments and field of operation.

3. The partiality for general anesthesia.

But he finds that these fears, failures and partialities are being overcome and that there is an increasing popularity of local anesthesia and this is due to:

1. The incomparably greater safety, certainty of insensibility and facility of operating.

2. The admixture of suprarenin to the novocain which retards the absorption of the anesthetic in the circulation, deepens the anesthesia and increases the anaemia in the field of operation.

3. The use of less toxic, more stable, sterilizable, and non habit forming novocain instead of cocain.

4. The perfection of the method perineural and conductive anesthesia due to Braun.

Novocain is ten times less toxic than cocain. Experiments made reduce this by the admixture of other drugs, but, with the exception of Ringer's solution, these have not sufficiently proved their worth to be adopted.

Ringer's solution has proved most advantageous in every respect, the formula of which is:

Sodium chlorid	0.5
Calcium chlorid	0.04
Potassium chlorid	0.02
Aqua distillata	100.00

This formula in tablet form is on the market. One tablet is added to 10c.c. aqua distillata and this to be used in making the novocain suprarenin solution.

The normal salt solution or the Ringer's solution should be kept in non alkaline Jena glass. If ordinary glass is used one drop of a 10 per cent. solution of hydrochloric acid is employed to neutralize the alkalinity which precipitates the novocain.

The author recommends the making of a fresh solution of the novocain suprarenin tablets in front of the patient. and states that the dry novocain tablets are most practical for making the solution. But "no risk should be taken with a solution made from tablets which are not white." The use of rubber stoppered tubes and kept in a cool dry place is recommended and cautions against the use of novocain suprarenin tablets containing sodium chloride, as this makes a very unstable tablet owing to the hydroscopic property of sodium chloride.

For the occasional use of local anesthesia ampules containing a sterile novocain suprarenin solution are recommended. The discoloration of stale solution is a reliable danger signal whether in an ampule or prepared in any other way. Serious results such as extensive edema, dangerous hemorrhage and necrosis have resulted from such solutions.

The author recommends—in arterio-sclerotics, cardiacs, suspected aneurysm, in children and the aged, in simple extractions, pulp extirpations, excavation of hypersensitive dentin, and scaling operations, combining the use of tablets E and G with the addition of one third to one half more Ringer's solution, which will thus reduce the concentration of the novocain and suprarenin without notably reducing the anesthetic power of the solution.

The use of truly distilled water is one of the important factors in preparing the Ringer solution.

An anatomic specimen jar within which is placed a metal rack or holder is suggested in which to keep syringes, needles, pliers, dissolving cup and lancet. The jar is filled with a solution of 70 per cent. alcohol 74 parts, and pure glycerine 1 part.

The danger of breaking a needle during the act of injecting is largely done away with by the use of an iridio-platinum or tantalum needle. Rusting is prevented and sterilization more easily accomplished by their use.

DEATHS

BARBER—Died October 13, 1914, at Portland, Oregon, from effects of a fall, S. J. Barber, D.D.S., aged 73 years.

BUTLER—Died suddenly, December 15, 1914, of neuralgia of the heart, Charles Richard Butler, D.D.S. of Cleveland, Ohio.

HOLMES—Died November 11, 1914, at his home in Waverly Place, Grand Rapids, Mich., Ezra Sprague Holmes, D.D.S. Dr. Holmes was born in Niagara County, N. Y., July 15, 1819, and was the oldest dentist in Michigan.

HOWE—Died at his home in New York City, on Friday, November 13, 1914, J. Morgan Howe, D.D.S., aged 72 years.

JACK—Died December 9, 1914, Louis Jack, D.D.S., in his eighty-second year. He was the last survivor of the class of 1854 of the old Philadelphia College of Dental Surgery.

TURNER—Died November 14, 1914, at St. Louis, Mo., from an accident, Thomas Edward Turner, D.D.S., in his forty-seventh year.

WALKER—Died November 21, 1914, Wm. Ernest Walker, D.D.S. His death was caused by uraemia. Dr. Walker was in his forty-seventh year.

SOCIETY NOTES

COURSE OF INSTRUCTION GIVEN BY COLLEGE OF DENTISTRY, UNIVERSITY OF ILLINOIS

These instructions will begin Monday evening, February 8th, and continue every Monday evening through February and March. The course will be given in the Amphitheatre of the College building, 1838 W. Harrison St., corner Honore, beginning promptly at 8 o'clock each evening and lasting one hour. The course is open without cost to ethical practitioners of dentistry and medicine.

I. Local Anesthesia.—FREDERICK B. MOOREHEAD.
II. Nitrous Oxide and Oxygen.—LOUIS SCHULTZ.
III. Enamel Cleavage.—(Illustrated by stereopticon).—FREDERICK B. NOYES
IV. The mouth as a factor in pathogenesis.—FREDERICK B. MOOREHEAD.
V. Relation of disturbances to the osseous system and to the teeth.—D. J. DAVIS.

MINNESOTA.

The next meeting of the Minneapolis Dental Society will be held in the City Hall, Minneapolis, February 11–13, 1915.—H. W. NEILSON, 400 Reid Corner, Minneapolis, *Secretary.*

NEW YORK.

The next annual meeting of the University of Buffalo, Dental Department, Alumni Association, will be held February 5–6, 1915, at Iroquois Hotel, Buffalo, N. Y.—G. M. FIERO, 1370 Main St., Buffalo, N. Y., *Chairman Exhibit Committee.*

OKLAHOMA

The next meeting of the Oklahoma State Dental Society will be held in Oklahoma City, March 15–19, 1915.—C. R. LAWRENCE, Enid, Okla., *Secretary.*

SOUTH CAROLINA.

The next annual meeting of the South Carolina State Board of Dental Examiners will be held at Columbia, S. C., June 15, 1915. All applications must be in the hands of the secretary not later than June the 5th.—R. L. SPENCER, Bennettsville, S. C., *Secretary.*

The annual meeting of the South Carolina State Dental Association will be held at the Jefferson Hotel, Columbia, S. C., April 13–16, 1915.—E. C. DYE, Greenville, S. C., *Secretary;* P. D. BROOKER, 501 Palmetto Bldg., Columbia, S. C., *President.*

SOUTHERN MINNESOTA.

The Southern Minnesota District Dental Society will hold its annual meeting April 12th–14th, at Mankato, Minnesota.—GEORGE W. NORRIS, Mankato, Minn., *Secretary.*

TEXAS.

The thirty-fifth annual meeting of the Texas State Dental Association will be held in Galveston, Texas, May 19–22, 1915. The special feature of this meeting will be post-graduate lectures and clinic work.—C. M. MCCAULEY, *President;* W. O. TALBOT, Fort Worth, Texas, *Treasurer.*

FUTURE EVENTS

February 4–5, 1915.—Marquette University Dental Alumni Association, Ninth Annual Clinic, Manufacturers' and Dealers' Exhibit, New Hotel Wisconsin, Milwaukee, Wis.—C. E. GAGE, 804 12th St., Milwaukee, *Secretary.* WILLIAM KETTLER, 408 Berlin Arcade Building, Milwaukee, *Chairman Exhibit Committee.*

February 5–6, 1915.—Annual meeting of University of Buffalo, Dental Department, Alumni Association, Iroquois Hotel, Buffalo.—G. M. FIERO, 1370 Main St., Buffalo, *Chairman Exhibit Committee.*

February 8–9, 1915.—Alumni Association Washington University Dental School, St. Louis, Mo.—H. M. FISHER, *Secretary.*

February 11–13, 1915.—Minneapolis District Dental Society, City Hall, Minneapolis, Minn.—H. W. NELSON, 400 Reid Corner, Minneapolis, *Secretary;* O. DEFORREST DAVIS, 404 Donaldson Building, Minneapolis, *Chairman Exhibit Committee.*

March 9, 1915.—Fox River Valley Dental Society, Oshkosh, Wis.—R. J. CHADY, *Secretary.*

March 15–19, 1915.—Oklahoma State Dental Society, Oklahoma City.—C. R. LAWRENCE, Enid, Okla., *Secretary.*

March 16–19, 1915.—Next semi-annual meeting of the Dental Manufacturers' Club, Copley-Plaza Hotel, Boston, Mass.—A. R. KELTIE, J. J. CRIMMINGS, S. H. REYNOLDS, *Local Committee of Arrangements.*

April 12–13, 1915.—Southern Minnesota District Dental Society, Annual Meeting, Mankato, Minn.—GEORGE W. NORRIS, Tracy, Minn., *Secretary.*

April 13, 1915.—Alabama Dental Association, Montgomery, Ala.—J. A. BLUE, Birmingham, Ala., *Secretary.*

April 13–16, 1915.—South Carolina State Dental Association, Jefferson Hotel, Columbia.—E. C. DYE, Greenville, S. C., *Secretary.*

April 13–14, 1915.—Odontological Society of Western Penna., Annual Spring Meeting, Pittsburgh, Pa., LESLIE WADDILL, *Chief Exhibit Committee;* KING S. PERRY, *Secretary.*

April 20–22, 1915.—Connecticut State Dental Association, fifty-first anniversary, in Armory, Hartford.—CHAS. H. RIGGS, Hartford, Conn., *President;* E. R. BRYANT, New Haven, Conn., *Secretary.*

April 20–22, 1915.—Mississippi Dental Association, Jackson, Miss.—M. B. VARNADO, Osyka, Miss., *Secretary.*

April 27–29, 1915.—Kansas City Dental Association, Topeka, Kansas.—A. L. BENTON, *Secretary.*

May 4–6, 1915.—Iowa State Dental Society, Waterloo, Ia.—C. M. KENNEDY, Des Moines, Ia., *Secretary.*

May 5–7, 1915—Massachusetts Dental Society, Boston, Mass.—A. H. ST. C. CHASE, Everett, Mass., *Secretary.*

May 11–14, 1915.—Illinois State Dental Society, Peoria, Ill.—HENRY L. WHIPPLE, Quincy, Ill., *Secretary.*

May 13–15, 1915.—New York State Dental Society, Albany, N. Y.—A. P. BURKHART, 52 Genesee St., Auburn, N. Y., *Secretary.*

May 18–20, 1915.—Indiana State Dental Association, Claypoole Hotel, Indianapolis.—A. R. ROSS, Lafayette, Ind., *Secretary.*

May 19–22, 1915.—Texas State Dental Association, Galveston, Texas.—C. M. MCCAULEY, *President.*

June, 8–10. 1915.—The 46th Annual Meeting of the Kentucky State Dental Association, School Building, Ashland, Ky.—CHAS. SHACKLETTE, 540 The Atherton Building, Louisville, Ky., *Secretary.*

June 10–12, 1915.—Missouri State Dental Association, Golden Jubilee Meeting, Jefferson City.—S. C. A. PUBEY, New York Life Bldg., Kansas City, Mo., *Secretary.*

June 11–12, 1915.—Maryland State Dental Association, Baltimore, Md.—F. F. DREW, 701 N. Howard St., Baltimore, Md., *Secretary.*

June 15, 1915.—South Carolina State Board of Dental Examiners, Columbia, S. C.—R. L. SPENCER, Bennettsville, S. C., *Secretary.*

June 23–25, 1915.—North Carolina Dental Society, Wrightsville Beach, N. C.—R. M. SQUIRES, Wake Forest, N. C., *Secretary.*

July 13–15, 1915.—Wisconsin State Dental Society, Oconomowoc, Wis.—O. G. KRAUSE, *Secretary.*

August 30, 1915.—Federation Dentaire Internationale, San Francisco, Cal.—BURTON LEE THORPE, *Assistant Secretary.*

August 30–Sept. 1–9, 1915.—Panama-Pacific Dental Congress, San Francisco, Cal.—ARTHUR M. FLOOD, 240 Stockton St., San Francisco, Cal., *Secretary.*

November 4–6, 1915.—Virginia State Dental Association, Richmond.—C. B. GIFFORD, *Secretary.*

PATENTS

1092553—Producing dental suction, JAMES H. ABBOTT, Philadelphia, Pa.
1092554—Suction for dental plates, JAMES H. ABBOTT, Philadelphia, Pa.
1092701—Dental instrument, GEORGE S. EDWARDS, Greencastle, Pa.
1092671—Dental jaw-brace, MATHIEU SOUVIELLE, Jacksonville, Fla.
1092307—Dental instrument, JOHN L. TALBOTT and W. S. WRIGHT, Lompoc, Cal.
45572—Design, Handle for toothbrushes, JULES J. SARRAZIN, New Orleans, La.
1093125—Impression device for dental use, W. C. J. GUILFORD, Washington, D. C.
1093420—Blowpipe, CHARLES HOLDER, JR., New York, N. Y.
1093495—Blowpipe, MATTHEW STEEL, SR., and M. STEELE, JR., Gosforth, England.
1094203—Dental impression tray and detachable handle, LESLIE E. EATON, Sturgis, S. D.
1093865—Sanitary shield for dental instruments, CHAPIN F. LAUDERDALE, Portland, Ore.
1094257—Evacuator, ADOLPH W. SCHRAMM, Riverton, N. J., and P. RUSELL, Brooklyn, N. Y.
1094269—Dental crown remover, RICHARDSON H. TAYLOR, Mecker, Colo.
1095018—Artificial teeth, GLENN E. and J. G. MORNINGSTAR, Greenville, Ohio.
1094746—Artificial denture, ADOLF POCHWADT, Berlin-Schoneberg, Germany.

Copies of above patents may be obtained for fifteen cents each, by addressing JOHN A. SAUL, Solicitor of Patents, Fendall Building, Washington, D. C.